AN HBJ PUBLICATION

$2.50 / AUGUST 1987

LANDSCAPE MANAGEMENT

Formerly WEEDS TREES & TURF

CORES

'Cultivating' healthy turf

Golf Course Fertilization Guide

Penneagle crowds out bluegrasses on Butler National's fairways

Triplex fairway mowing at The Butler National Golf Club, Oak Brook, IL

When Oscar Miles, CGCS, of The Butler National Golf Club, introduced Penneagle creeping bentgrass into his Poa annua infested A-20 bluegrass fairways in 1980, he took a dynamic step toward the beautiful fairways praised by the pros during the Western Open.

Utilizing a prescribed program of aggressive, deep core aerification, drop seeding and verticutting, Penneagle was expected to *aggressively compete* with the bluegrasses. With triplex mowing and clipping removal, the unwanted grasses are yielding to Penneagle.

Oscar feels that his fairways are *now* 70-90% Penneagle.

With Butler National's reputation at stake, Oscar Miles couldn't chance anything less than Penneagle for his "immaculate" fairways.

Warren Bidwell is available to talk to your superintendents' group about Butler National Golf Course and the "Penn Pals," Penncross, Penneagle and Pennway Blend, on your golf course. Call or write TEE-2-GREEN Corp. for details.

Penneagle blue tags earn cash or prizes.

Call or write us for details

Penneagle's Oregon certified blue tags qualify for cash awards to qualifying turf organizations for turf research. Call our toll-free number for details.

Marketed by **TEE-2-GREEN Corp.**, PO Box 250 Hubbard, OR 97032 1-**800-547-0255** TWX **510-590-0957**

Circle No. 145 on Reader Inquiry Card

Nourish Your Turf With NITROFORM®

Nourishing your turf with NITROFORM® assures better root development and healthier turf by providing six important benefits.

1 Consistent 38% nitrogen.

2 Sustained, predictable release by soil bacteria to provide nitrogen when needed most by roots and vegetative parts.

3 Provides organic nitrogen and carbon to enhance bacterial activity, even in sandy soils.

4 Non-burning to turf, trees, or ornamentals when used as directed.

5 Environmentally sound... resists leaching, even in porous soils.

6 Fewer applications a year are required.

For a complete information kit on nourishing and protecting your turf, join the NOR-AM Turf Management Program. Write to the Communications Department, NOR-AM Chemical Company, 3509 Silverside Road, P.O. Box 7495, Wilmington, DE 19803.

NITROFORM® is available as BLUE CHIP® or GRAY CHIP™ for dry application, or as POWDER BLUE® or POWDER GRAY™ for liquid application.

NOR-AM

NOR-AM CHEMICAL COMPANY
3509 Silverside Road, P.O. Box 7495
Wilmington, DE 19803

IMPORTANT: Please remember always to read and follow carefully all label directions when applying any chemical.

Circle No. 132 on Reader Inquiry Card

TOUGH / EASY

in the rough on the green

You get the best of both worlds with the New Holland LB-620. A tough, articulated loader/backhoe that's easy to operate in rough spots and tight spaces. And, a lightweight low-profile design, with a softer touch on turf.

Balanced design

The low-profile design distributes the weight over each drive wheel for full ground contact and a softer touch on turf. Positive four-wheel hydrostatic drive combines with four-way articulation to give you the flotation and traction you need in rough spots and soft spots, and adds extra stability on slopes and rough terrain.

With a tighter turning radius, and a lower profile, the LB-620 works in spaces that are too tight for other loader/backhoes.

Deep digging— high dumping

Powered by a 53-hp diesel engine, the backhoe has a digging force of more than 10,000 pounds, and digs 11′-13′. The 5/8 cubic-yard capacity loader moves into the load with a breakout force of 6,442 pounds. Dump height is more than nine feet.

Easy transport

The compact LB-620 makes job-to-job transport easier, too. You tow it on a trailer behind a one-ton pickup. Yes, the LB-620 takes on the toughest jobs—but works with a soft touch. Ask your New Holland dealer for a demonstration, or write to Ford New Holland, Inc., 500 Diller Ave., New Holland, PA 17557.

Ford
FORD
NEW HOLLAND

Circle No. 115 on Reader Inquiry Card

AUGUST 1987, VOLUME 26, NUMBER 8

LANDSCAPE MANAGEMENT

Formerly WEEDS TREES & TURF

22

30

46

22 COVER STORY: BRING BACK THE GRASS
Damaged grass can be rejuvenated in any number of ways. Renovation through aerification and overseeding might cure your damaged turf.

30 A CHALLENGING COURSE
Olympia Fields' two courses have presented more challenges for the superintendent than they have for the golfers.

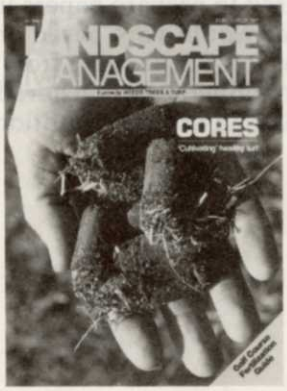
36 FERTILIZATION GUIDES FOR GOLF COURSE TURF
36 Warm-season grasses
38 Cool-season grasses

46 ANATOMY OF AN I.P.M. PROGRAM
Using 'scouts' to detect pest populations, Montgomery Village in Maryland was able to save money yet keep its turf healthy and beautiful.

56 MANAGEMENT EVALUATION
In Part II of this series, Rudd McGary and Ed Wandtke deal with management evaluation and assessment.

DEPARTMENTS

3 NEWS/TRENDS
8 GREEN INDUSTRY NEWS
14 SHORT CUTS
54 ON DESIGN
64 RESEARCH UPDATE
66 PROBLEM MANAGEMENT
68 JOBTALK
72 PRODUCTS
78 CLASSIFIED
86 AD INDEX



ON THE COVER: Excellent soil cores removed by a tine aerator.

LANDSCAPE MANAGEMENT, formerly WEEDS TREES & TURF, (ISSN 0894-1254) is published monthly by Harcourt Brace Jovanovich Publications. Corporate and Editorial offices: 7500 Old Oak Boulevard, Cleveland, Ohio 44130. Advertising Offices: 7500 Old Oak Boulevard, Cleveland, Ohio 44130, 111 East Wacker Drive, Chicago, Illinois 60601 and 3091 Maple Drive, Atlanta, Georgia 30305. Accounting, Advertising Production and Circulation offices: 1 East First Street, Duluth, Minnesota 55802. Subscription rates: $25 per year in the United States: $35 per year in Canada. All other countries: $70 per year. Single copies (pre-paid only): $2.50 in the U.S.; $4.50 in Canada; elsewhere $8.00; add $3.00 for shipping and handling per order. Second class postage paid at Duluth, Minnesota 55806 and additional mailing offices. Copyright © 1987 by Harcourt Brace Jovanovich, Inc. All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical including photocopy, recording, or any information storage and retrieval system, without permission in writing from the publisher.

BPA ABP

POSTMASTER: Send address changes to LANDSCAPE MANAGEMENT, P.O. Box 6198, Duluth, Minnesota 55806.

HBJ A HARCOURT BRACE JOVANOVICH PUBLICATION

Insurance costs are growing

■ Rising liability insurance costs and legal battles are facing the green industry through the rest of the decade. Costs for insurance and legal defense fees constitute two major expenditures already in a number of golf course and company budgets.

John Moulder of Moulder Bros., Glendale, Calif., says his company spends about $300,000 annually on insurance. He estimates that the fees have risen 450 percent in the last few years. However, he says, his legal fees are even larger.

Moulder Bros. currently faces about 15 lawsuits, either active or threatened. One involves a Naval employee who allegedly had an allergic reaction to a herbicide being sprayed by the company on a Naval installation. The suit is for between $130,000 and $140,000.

Golf clubs are also getting caught in the liability trap. Debates have surfaced over when clubs and courses are liable for injuries and damage resulting from wayward golf balls.

Courses built out in the boondocks 10 years ago now are in the middle of large residential areas. California (again) has led the way in the liability game. The "here first" argument does not hold up in court there (*Sierra Screw Products v. Azusa Greens, Inc.* 1979), the courts contending that courses are liable for damage and injury on adjacent property even though the property was developed after the course was in place and operating.

In addition, court cases have found clubs liable for spectator injury during tournaments. Perhaps clubs and tournaments should adopt a policy similar to that in place at many major league baseball parks such as Cleveland, which flashes a disclaimer on the scoreboard before each game releasing the team and organization from liability. Basically, it says by coming to the event the spectator assumes responsibility for an injury.

Clubs can successfully defend against liability cases if they can prove that "reasonable care" was taken in protecting residents adjacent to the course through design.

Registration fees causing stink

■ Pesticide manufacturers are raising their voices against an EPA proposal to add a registration fee above and beyond the normal fee required to prepare papers under FIFRA.

Fees would vary based on the type of application a company makes to EPA, ranging from $163,000 for new chemicals to $600 for amendments to registered ones. The fees could put many small business in critical condition, or worse.

LM Editorial Staff

Jerry Roche Heidi Aungst Jeff Sobul

LM

STAFF

Editor
Jerry Roche, Cleveland
Managing Editor
Heide Aungst, Cleveland
Assistant Editor
Jeff Sobul, Cleveland
Publisher
Dick Gore, Atlanta
National Sales Manager
Jon Miducki, Cleveland
Senior Vice President
Tom Greney, Chicago
Group Vice President
Robert Earley, Cleveland
Production Manager
Carol Young, Duluth
Production Supervisor
Marilyn MacDonald, Duluth
Graphic Design
Deb Georges, Duluth
Graphic Coordinator
David Komitau, Cleveland
Circulation Supervisor
Gail Mantay, Duluth
Directory Coordinator
Linda Hietala, Duluth
Reader Service Manager
Gail Kessler, Duluth
Promotion Director
Linda Winick, Cleveland

OFFICES

ATLANTA
455 East Paces
Ferry Road Suite 324
Atlanta, GA 30305
(404) 233-1817

CLEVELAND
7500 Old Oak Boulevard
Cleveland, OH 44130
Editorial: (216) 243-8100

CHICAGO
111 East Wacker Drive
Chicago, IL 60601
(312) 938-2344

SEATTLE
1333 N.W. Norcross
Seattle, WA 98177
(206) 363-2864

DULUTH
120 West Second Street
Duluth, MN 55802
(218) 723-9200

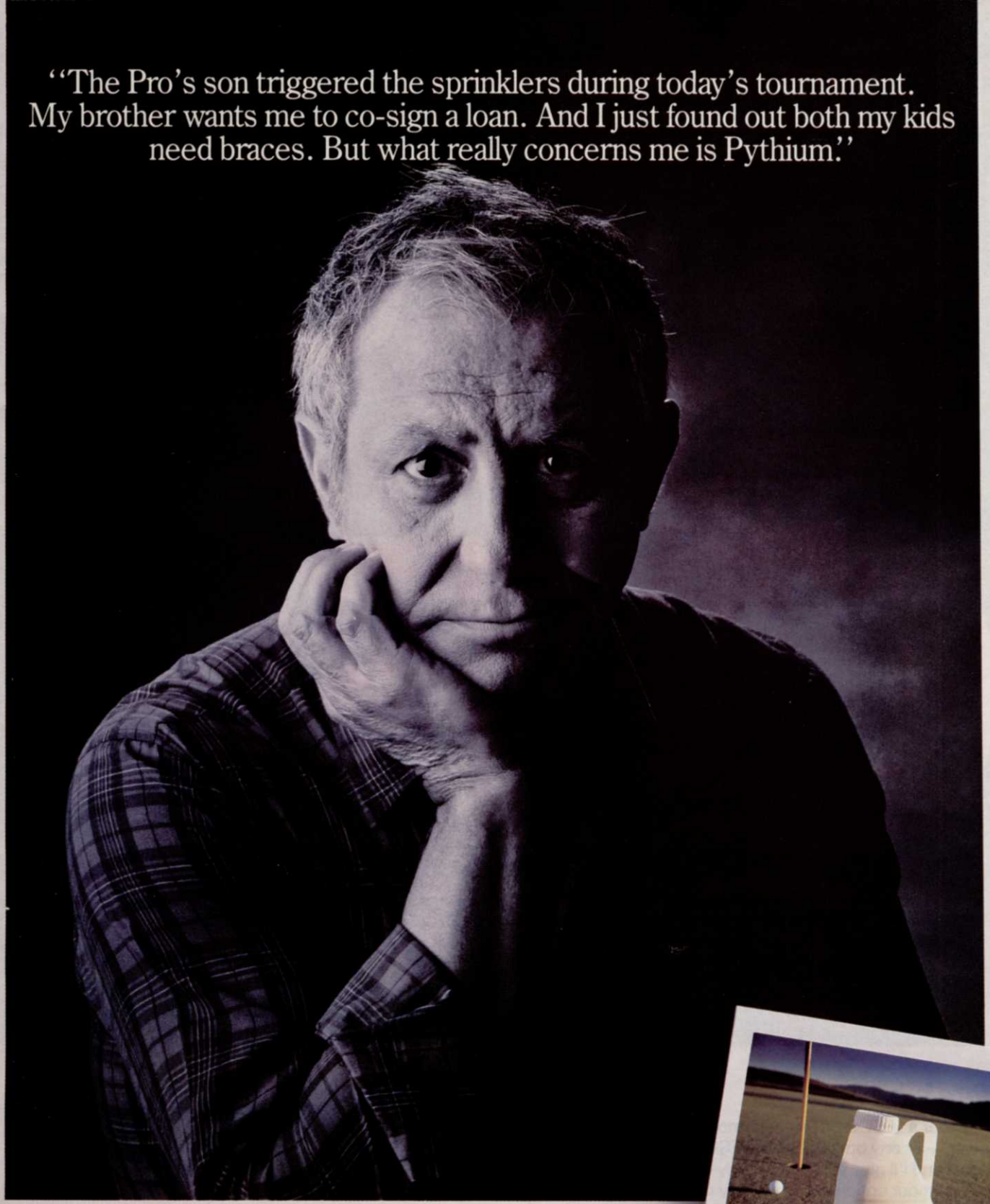
MARKETING REPRESENTATIVES

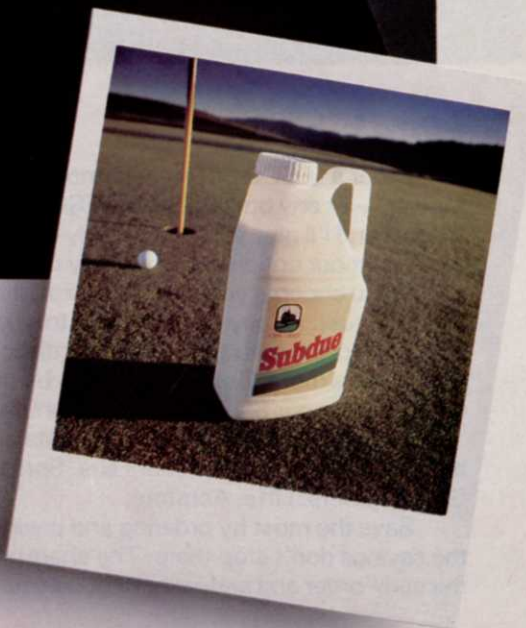
Dick Gore
Atlanta (404) 233-1817
Jon Miducki
Cleveland (216) 243-8100
Marsha Dover
Cleveland (216) 243-8100
Ken Kuhajda
Cleveland (216) 243-8100
Robert Mierow
Seattle (206) 363-2864

HBJ HARCOURT BRACE JOVANOVICH PUBLICATIONS

Robert L. Edgell, Chairman; Richard Moeller, President; Lars Fladmark, Executive Vice President; Arland Hirman, Treasurer; Thomas Greney, Senior Vice President; Ezra Pincus, Senior Vice President; Joe Bilderbach, Vice President; James Gherna, Vice President; George Glenn, Vice President; Harry Ramaley, Vice President.

"The Pro's son triggered the sprinklers during today's tournament. My brother wants me to co-sign a loan. And I just found out both my kids need braces. But what really concerns me is Pythium."





There's one sure way to avoid worrying about Pythium. Use Subdue® fungicide. Subdue stops Pythium on contact. And once absorbed by grass roots, Subdue protects your turf against further attack for up to three weeks. So don't let Pythium get you down. Get Subdue. Because you've got other things to worry about. CIBA–GEIGY

©1987 CIBA-GEIGY Corporation, Ag Division, Box 18300, Greensboro, NC 27419 Always read and follow label directions.

Circle No. 107 on Reader Inquiry Card

I'M OFFERING YOU MORE THAN

23% OFF

ON LESCO EQUIPMENT

Here's how.

Order a LESCO 300 Greensmower or 500 Fairway Mower — or any other piece of LESCO equipment — in August and I'll give you a 12% early-order discount. Take delivery at our option and don't pay until April 1, 1988.

If you choose, you can save an additional 7% by paying in August. Or pay anytime prior to March 1, 1988 and take a 1% per month early-payment discount. (See chart.)

There's more. Save another 5% by picking up your equipment at our Sebring, Florida manufacturing facility.

Keep in mind, too, these discounts apply to all items in the LESCO equipment product line. Spreaders. Sprayers. Gang Mowers. Lifts. Aerators.

Save the most by ordering and paying in August, but the savings don't stop there. The chart highlights the early-order and early-payment discounts by month.

Determine your savings by combining discounts for the month you order and the month you pay.

Month	*Early Order Discount*	*Early Payment Discount*	*Sebring Pickup Allowance*
August	*12%*	*7%*	*5%*
September	*10%*	*6%*	*5%*
October	*8%*	*5%*	*5%*
November	*6%*	*4%*	*5%*
December	*4%*	*3%*	*5%*
January	*2%*	*2%*	*5%*
February	*1%*	*1%*	*5%*

The LESCO Equipment Early-Order Program ends February 29, 1988.

James I. FitzGibbon
Chairman and Chief Executive Officer
LESCO, Inc.

Here's why.

I can offer these discounts because it's to our advantage to manufacture and ship equipment year round. Delivering the bulk of our orders in March and April is simply not possible.

And remember, LESCO sells direct. With no dealers or distributors to supply, we have to do our own warehousing and carry our own inventory.

By leveling out our production and delivery, we run a more efficient and cost effective operation. And we're able to pass the savings on to you.

In addition to the savings, consider the benefits of owning and operating LESCO equipment. Because we manufacture and sell direct, we are able to utilize top-of-the-line components, incorporate the exclusive features our customers want and still sell at a competitive price.

And we stand behind our product with parts and service...and a toll-free hotline direct to our service manager. Our service department utilizes a fully computerized parts inventory and distribution center that allows quick and efficient response to customer inquiries. And our LESCO trucks stock an excellent assortment of replacement parts.

Early-Order. It's the way you've been buying fertilizer and control products for years. Now you can exercise the same buying power for equipment.

Don't delay. Maximize your savings by ordering now. Contact your LESCO Sales Representative or call us toll free.

(800) 321-5325
NATIONWIDE

LESCO

(800) 362-7413
IN OHIO

LESCO, Inc., 20005 Lake Road, Rocky River, Ohio 44116 • (216) 333-9250

Circle No. 123 on Reader Inquiry Card

LANDSCAPE MANAGEMENT

Average industry salary: $29,000 per year

The average landscape manager who reads this magazine supervises 16 employees and has been in the green industry for 14 years. According to original research conducted by Readex, Inc. for LANDSCAPE MANAGEMENT, the average landscape manager also makes about $29,000 per year.

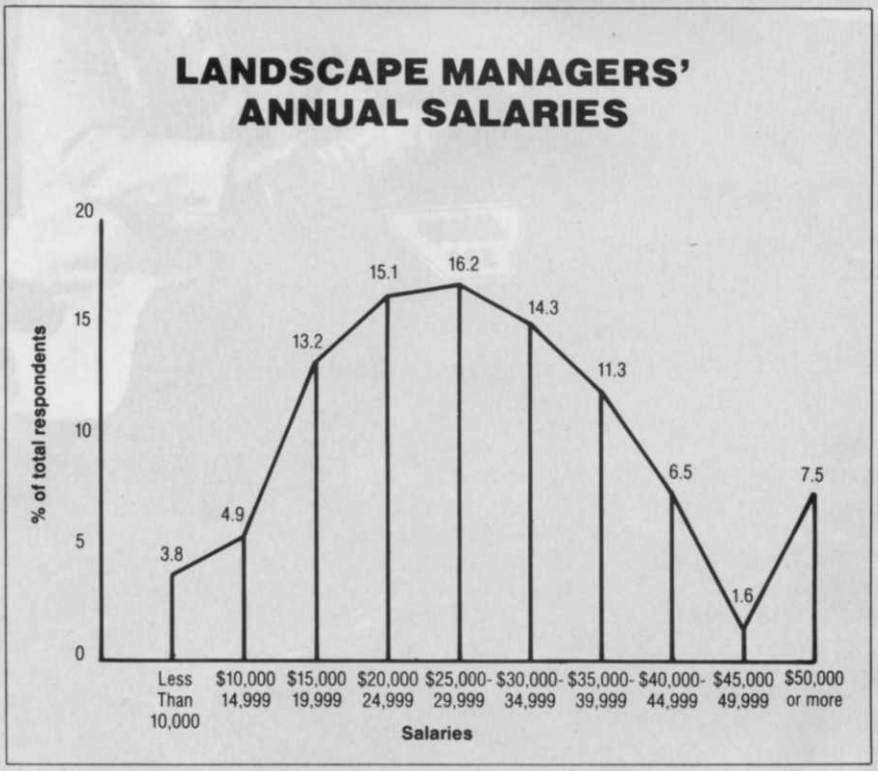
The survey, conducted last winter, determined that 46.9 percent of the random sample of LM readers have a college degree and that 70.2 percent have attended college.

Other averages from the survey:

- acres of turf maintained: 157
- miles of rights-of-way maintained: 71.5 miles;
- lake acres maintained: 25.3; and
- number of years in present position: 10.

Respondents supervising more than 50 employees was 5.7% of the sample. Those supervising 20-49 people was 11.6%; 10-19 was 25.1 percent; 5-9 was 25.1 percent and 1-4 was 20.2 percent.

The results were based on a sample size of 371 out of 500 questionnaires mailed, a response rate of 74 percent.



INDUSTRY

Barefoot strikes agreement with Scott's parent company

CDS Holding Co., a division of Clayton & Dubilier, New York, N.Y., has acquired controlling interest in Worthington, Ohio-based Barefoot Grass Lawn Service, Inc., for an undisclosed amount. The company also owns O.M. Scott & Sons.

"The management of CDS Holding was interested in increasing their participation in the lawn care business," says Kimberly J. Rendleman, a spokesperson for CDS. She adds that Barefoot Grass is recognized nationally as a leader in the lawn care industry.

Barefoot Grass is the fourth largest lawn care company in the country, with 43 branch and franchise outlets. Revenue for 1986 was $17.2 million for the branches, $4.8 million for the franchises.

"They (Dubilier) brought more to the table than money," says Barefoot Grass president Patrick Norton. "I'm very enthusiastic."

Norton feels the action will bring about little change in the company's present operations. He says one stipulation of Clayton Dubilier's buyouts is that management usually stays and continues to have a stake in the operation. CDS Holding's Rendleman confirms this, adding that no management changes are planned.

Norton

"O.M. Scott has the best name in do-it-yourself lawn care," Norton says. "There are some interesting though yet undefined opportunities as far as that goes.

"They'll open some doors for us as far as the ability to fund growth," he adds.

ASSOCIATIONS

N.A.A. to open its membership ranks

The National Arborist Association has opened its doors to any commercial tree service.

In the past, the N.A.A. had required prospective members to be recommended by a member firm. That requirement has been dropped.

"We are increasing our staff from six to seven people," says executive director Bob Felix. "We would like to increase our membership from our current 600 to include many of the other 13,000 tree services which make up our industry.

"We would also like to upgrade those who aren't members through communication and education. We need better trained tree workers, crew leaders and owner knowledge about the tree care business," Felix notes.

With a larger member base, Felix feels the N.A.A. can better serve the industry.

For more information, contact Patricia Felix, N.A.A., 174 Route 101, Bedford, NH 03102. Phone number there is (603) 472-2255.

New faces at LM

Jon Miducki (above left) has been named national sales manager for LANDSCAPE MANAGEMENT magazine, according to publisher Dick Gore. Miducki had been regional sales manager. Added to the sales staff of the magazine as regional sales managers are Marsha Dover (center), who will be serving portions of the Midwest, and former managing editor Ken Kuhajda (right), whose territory will cover the upper Eastern seaboard and New England. Bob Mierow will continue to service the West Coast.

CONVENTIONS

Staubach keynotes annual PLCAA show

Hall of Fame quarterback Roger Staubach, the winningest quarterback in National Football League history, will present the keynote address for the eighth annual Professional Lawn Care Association of America's Conference and Show in San Antonio, November 12-15.

Staubach played 11 seasons in the NFL after getting a late start on his professional career because of his four-year military obligation following graduation from the Naval Academy.

He was the Cowboys' starting quarterback for 8½ seasons, leading them to victories in Super Bowls VI and XII. Staubach won many honors in his college and pro career, including the Heisman Trophy as the top collegiate player in 1963, and the Bert Bell Award in 1971 as the top player in the NFL.

READERS RESPOND

How would a change in the minimum wage affect you?

A bill introduced by Sen. Edward Kennedy (D-Mass.) would eventually raise the minimum wage to $5 per hour. If passed, the bill could have an effect on the green industry.

"I am of the opinion that the minimum wage is controlled by supply and demand. Because of the short supply of labor, businesses are already paying that much to get people in the door. So, in this area it won't have much effect."

—Susan B. Haupt
The Haupt Tree Co.
Suffolk, Mass.

"The impact I think it's going to have on our business is in several things. Operations will become more automated, relying more on chemicals. I don't think any of the impact will be good. It will raise everybody's costs across the board. Fifty percent of everything we buy is labor-related.

"Anybody naive enough to believe that it's not going to have an effect because they pay more than the minimum wage now is crazy."

—Dave Pinkus
North Haven Gardens
Dallas, Tex.

"We pay pretty much that anyway. They make close to that starting out, and if they can do the job then we raise them up. I'm looking to pay bigger bucks than $5 to hold these guys if they're good."

—Bob Berry
Lancaster Landscape
Arlington, Va.

For Maximum Emergence And Seedling Establishment, Ask For

APRON®

Treated Turfgrass Seed.

Apron Treated Untreated

Apron, a systemic seed treatment fungicide, controls *Pythium* up to 21 days after seeding on turf species like ryegrass, fescue and bentgrass. Length of control may vary based on environmental and management conditions.

As the seed starts to germinate, Apron is systemically translocated throughout the entire growing seedling.

Since Apron systemically protects young plants from *Pythium* seed decay and damping off, you get maximum emergence and seedling establishment.

For broad spectrum seed and seedling disease control, you can have your seed treated with Apron and either Captan or Thiram.

Call your seed distributor today and ask for Apron treated seed for all your professional turfgrass plantings.

Gustafson

P.O. Box 660065 • Dallas, Texas 75266 • (214)985-8877

Apron is a Reg. TM of CIBA-GEIGY
Gustafson (logo) is a Reg. TM of Gustafson, Inc.

Circle No. 116 on Reader Inquiry Card

CHEMICALS

Elanco announces name of herbicide

Elanco Products Company has formally named its broadleaf pre-emergence herbicide EL107 "Encore."

The non-phenoxy herbicide, chemical name isoxaben, is registered to work on over 40 broadleaf weeds, though it doesn't control perennial dandelions. According to Elanco communications manager Roger Foulks, it does suppress seedling dandelions with about 80 percent efficiency. It has no post-emergence activity.

Development of the herbicide began about nine years ago, Foulks says. It was first introduced in England in 1981 for pre-emergence control of winter annuals in wheat and barley fields. Application rates were about 10 to 20 grams per acre, though Foulks says rates would be higher for turf.

ChemLawn has been conducting trials with the herbicide in the U.S. The herbicide is intended for use in the spring to control summer annuals, and in the fall to control winter annuals. Foulks says Elanco expects EPA registration in time for use in Fall, 1988.

PEOPLE

Retirement for industry leaders

Two distinguished members of the green industry will retire after more than 25 years of service to the industry.

Bob Lederer is retiring this month after 29 years with the American Association of Nurserymen, the last 23 serving as executive vice president.

He is noted for working with a

Nancy Reagan and Bob Lederer

number of First Ladies on various programs, beginning with Lady Bird Johnson in her National Beautifica-

continued on page 14

Lean, green low-thirst machine.

Again rated #1
in National Turf Grass Evaluation programs.

Arid's finer leaves, rich dark-green color, lower growth and deep roots create an attractive turf requiring less maintenance. Deep roots enable Arid to better withstand temperature extremes—cold winters and hot summers. Arid is an excellent choice for humid transition zones. It has improved drought and heat tolerance and requires less water. Arid's low-growth characteristics mean less mowing.

Order Arid from your seed wholesaler or sod distributor.

Another fine, quality controlled product of
Jacklin Seed Company

Arid

TURF TYPE TALL FESCUE

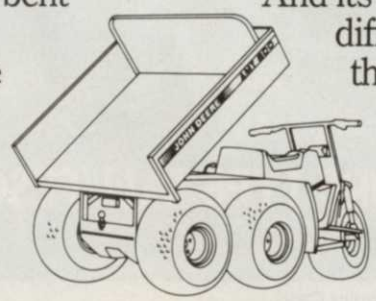
Circle No. 117 on Reader Inquiry Card

LANDSCAPING WITH

The new John Deere AMT™ 600 "All Materials Transport" treads so lightly, it'll barely bend your bent grass.

That's because even with a 600 pound payload and a 200 pound operator on board, the AMT only puts down an average of 17 psi of ground pressure.

And its automotive-type differential allows the inside wheels to turn slower than the outside wheels. So the AMT won't tear up your turf turning either.



The 48¼ x 43-in. box manually raises to a 45 degree angle.

But for all the features that won't leave a bad impression on your turf, there are even more that'll leave a good impression on you.

Like the way the AMT's

OUT LANDSCUFFING

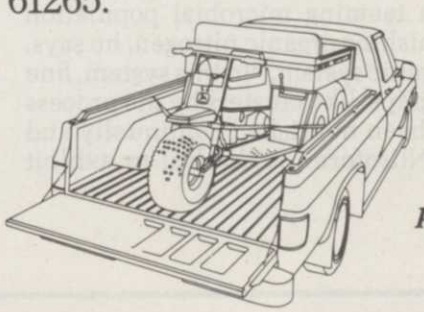
powerful 8.5-hp drive system provides a 62-to-1 torque ratio for tremendous pulling power.

Or the way its box holds 12.5 cubic yards of material—and manually tilts too.

So if you're looking for a utility machine that won't sink into your landscape or your budget, see your John Deere dealer. Or write John Deere, Dept. 84, Moline, IL 61265.

Nothing Runs Like a Deere®

JOHN DEERE 1837-1987 150



AMT 600 transports easily in a standard size pickup.

SAFETY live with it

SHORT CUTS

STATE OF THE UNION... Union membership will be mandatory if a new bill gets through Congress. H.R. 281, known as the anti-double breasting bill, calls for compulsary union membership for construction workers, including landscape firms and contractors. Such a law could escalate labor costs, reducing the ability of some firms to compete for landscape bids. The American Association of Nurserymen is asking landscape managers to oppose the bill. Write your representative at U.S. House of Representatives, Washington, D.C. 20515; (202) 224-3121.

HOLE-HEARTED RESEARCH... Preliminary athletic turf studies at the University of California at Riverside by Matt Leonard, Ph.D., with polyethylene covers determine that the hole size in the covers has some effect on turfgrass ground temperatures. Leonard evaluated hole sizes of 1/4, 1/2, and 3/4 inches on five-inch centers and concluded that the smaller hole size seemed best because more heat could be retained longer.

GETTING IT STRAIGHT... Turf Seed sells wildflower mixes, not Tee-2-Green, as we reported in the May issue of LANDSCAPE MANAGEMENT. In addition, we reported in the April issue that since Jacklin Seed Co. was increasing its bentgrass growing acreage by 35 percent, supplies of Pennlinks, Penncross and Seaside bentgrasses would be good. However, Gayle Jacklin points out that high demand may keep supplies limited.

HOUSEHOLD CHORES... How many pesticides is the average person exposed to during the day? The EPA wants to know. A study is looking at homes in Springfield, Mass., and Jacksonville, Fla. About 50 participants will carry personal air monitors to determine their exposure to about 30 different household pesticides during routine daily activities. Identical monitors will be placed in the homes and yards of the participants. Several participants will be asked to perform pesticide applications. The results are due in late 1988.

PALM TREES IN NEW YORK?... In the "On Design" feature in June (page 63) pictures at the bottom of the page were reversed. The Oyster Bay, N.Y. residence by Alley Pond Nurseries Huntington, Inc. of Dix Hills, N.Y. is set in a wooded area containing redbuds, weeping hemlock and birch. The Ft. Lauderdale, Fla., project designed by Roland Lieber of Naples, Fla. and installed by Friends Landscape of Ft. Lauderdale, contains tropical Alexander palms and bougainveilla. We apologize for the mix-up.

DEALING WITH DROUGHT... According to Fred V. Grau, Ph.D., of the Musser Foundation and National Sports Turf Council, soil fortified with a teeming microbial population delays drought effects. By furnishing organic nitrogen, he says, the turf is maintained in an organic system. "In this system, fine soil particles are formed into grape-like clusters by the process of flocculation. Turf that has been nourished continually and consistently with ureaform (Nitroform) is the last to exhibit drought effects."

NEWS *from page 10*

tion Program during the 1960s. He has worked with Patricia Nixon, Rosalyn Carter and Nancy Reagan on AAN's National Landscape Awards Program. He also serves as the vice president on the board of the National Wildflower Research Center.

Ablon

Leonard Ablon, vice president of sales for Western Landscape Construction, a subsidiary of Environmental Industries, Inc., Calabasas, Calif., will retire after 25 years with Environmental. He will continue with EII in an advisory role.

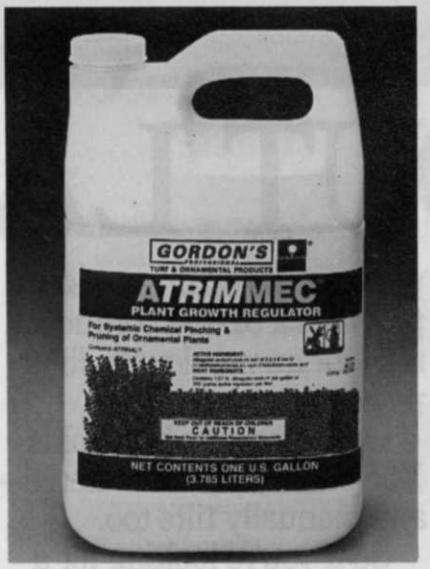
Ablon joined EII subsidiary Valley Crest Landscaping in June, 1962, and was instrumental in the growth of the company over the following years. In 1965 he became president of V.C. Irrigation, a company established to handle irrigation installation for Valley Crest Landscape and other contractors. He remained president until 1969, when V.C. Irrigation merged with Valley Crest Landscaping.

PRODUCTS

Growth regulator can reduce pruning

A new plant growth regulator registered for use on shrubs, hedges and trees has been released by PBI-Gordon.

According to the company, Atrimmec Plant Growth Regulator will cut pruning and labor costs by 50 percent or more.



The active ingredient in Atrimmec, atrinal, interrupts apical domi-

continued on page 16

Look closely at this course. No dollar spot in sight. Not even resistant dollar spot, thanks to Rubigan.

Rubigan controls dollar spot on your tees, greens and fairways for only about 10 cents per 1,000 square feet per day. That's all. And you get a full 28 days control with just one 0.4 oz. application per 1,000 square feet.

Now look closer. Notice there's also no fusarium blight, necrotic ring spot, summer patch or take-all patch. And no large brown patch, either, with a Daconil 2787® tank mix.

Only Rubigan is labeled to prevent and treat all these harmful diseases. No wonder Rubigan is the superintendents' choice for dependable dollar spot control in all types of weather.

This year, make your course look this spotless. Make it dollar spotless with Rubigan. See your Elanco distributor. Or call toll-free: 1-800-ELANPRO. In Indiana, call collect: 317-261-6102.

Elanco Products Company
A Division of Eli Lilly and Company
Lilly Corporate Center
Dept. E-455, Indianapolis, IN 46285, U.S.A.
Rubigan®—(fenarimol, Elanco Products Company)
Daconil®—(chlorothalonil, SDS Biotech Corporation)

Circle No. 113 on Reader Inquiry Card

Dollar spotless.

Dollar for dollar, nothing controls dollar spot better than Rubigan®.

NEWS *from page 14*

nance, halting growth at the vegetation point. This marks the first time an atrinal formulation has been available for plant growth regulation in the United States.

The company maintains that the product will inhibit upward growth while encouraging lateral branching, allowing the plants to fill in. The chemical is applied as a foliar spray after ornamentals are trimmed. The active ingredient is translocated from the leaves to the growing tips. For larger trees, Atrimmec is applied by injection. The product has no effect on grassy plants.

Atrimmec causes only minute discoloration of leaf blade edges, notes PBI-Gordon's Hal Dickey. Because of this, he adds, "we don't think that people will go to the time and expense to mask it."

According to the company, one gallon of finished spray solution, containing 1 to 3 oz. of Atrimmec, will cover 400 to 600 sq. ft. of hedges, groundcovers or other vegetation. Atrimmec sells for about $208 per gallon.

PBI-Gordon has also introduced Ornamec Grass Herbicide, a post-emergent for control of annual and perennial grasses in ornamentals. Labeled for use on nearly 500 ornamentals, it is the result of an agreement with ICI-Americas, Inc., to formulate, package, market and sell fluazifop-P-butyl (Fusilade) herbicide in the United States under the PBI-Gordon trade name and logo. Fusilade has previously been used in crop agriculture.

Ornamec can be applied over the top on most of the ornamentals on its label, according to PBI-Gordon director of research Jan van Diepen, Ph.D. He notes that 30 grass weed species appear on Ornamec's label, with several more to be added in the future.

"Promark's 16SP has gotten me out of some really tight spots."

"My Promark 16SP stump grinder is compact, powerful and maneuverable. So, it's easy to move to job sites. And easy to use on the job.

Same goes for my 310 Chipper. Its rotating feed feature saves me extra work. And it's powerful, yet controlled. Large branches and limbs are processed without branch whip or chip ricochet. So I feel comfortable when my wife uses it.

Now that Kay and I have Promark, we won't use anything less." Wayne and Kay Cole
Wayne Cole's Tree Service
Chino, CA

For information or a free demo on Promark's complete line of high quality stump grinders, chippers, log splitters and aerial lifts, call (818) 961-9783.

Promark
The difference is design

Promark Products, Inc.
330 9th Avenue
City of Industry, California 91746

Circle No. 138 on Reader Inquiry Card

INDUSTRY

Nor-Am gets U.S. rights to fungicide

Nor-Am Chemical Co. has reached an agreement with Nihon Nohyaku Co. of Tokyo, to give Nor-Am sole U.S. licensing rights to a new fungicide compound.

The fungicide, flutolanil, is already in use in some areas of Asia, where it has been used primarily on rice fields.

According to George E. Jones of Nor-Am, the company will conduct field trials over the next two to three years to accumulate data for submission to EPA for approval to market the product, directed at agriculture, turf and ornamentals.

He expects it to be at least three or four years before the product, which is as yet unnamed, will be released to the market.

DISEASES

Multiple diseases the bane of courses

Golf course superintendents are having an exceptionally hard time coping with diseases of turfgrass this summer, according to Houston Couch, Ph.D., of Virginia Polytechnic Institute and State University.

"I've gotten calls from Ohio, North and South Carolina, Colorado, Nebraska, Texas, California and elsewhere this year," says Couch. "People are controlling one disease but something else comes in. I know for a fact that there are people losing jobs over this problem."

Couch suggests that golf course superintendents not "lock in" on one disease, but be on the look-out for multiple pathogens.

"This is proving to be the year of the pathologist," he claims.

MUSTANG

THE TALL FESCUE THAT LOOKS LIKE BLUEGRASS

KENTUCKY BLUEGRASS

MUSTANG TURF-TYPE TALL FESCUE

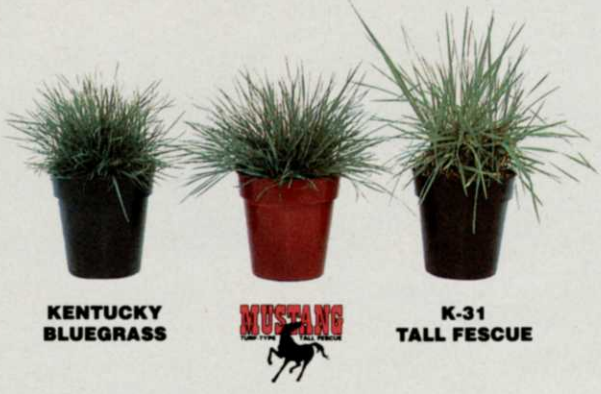
BLUEGRASS QUALITIES WITH TALL FESCUE PRACTICALITY

You'll quickly notice Mustang's finer texture, rich dark green color and dense, uniform turf—and you'll understand why we say Mustang has bluegrass-like qualities.

But there's more to Mustang turf-type tall fescue than beauty; it's tough and durable. It's heat and drought tolerance, winter hardiness, and ability to endure low mowing heights are remarkable. Mustang even shows improved resistance to *Helminthosporium* netblotch and many other diseases.

Best of all, Mustang is practical, because it performs extremely well under low maintenance conditions like minimum fertilization, watering and mowing. National tests and actual applications in parks, golf courses and playing fields have proven it.

DROUGHT TOLERANCE AFTER SEVEN WEEKS NO RAINFALL.



KENTUCKY BLUEGRASS | **MUSTANG** | **K-31 TALL FESCUE**

That's why Mustang is becoming the favorite choice of professional turf managers, over K-31 and many other commercially available varieties.

For bluegrass qualities and tall fescue practicality, use the professional's choice—Mustang turf-type tall fescue.

Pickseed also produces

Fiesta PERENNIAL RYEGRASS and Banff Kentucky Bluegrass

and other fine turf grasses available nationwide from quality seed suppliers.

Produced by:

PICKSEED®

PICKSEED WEST Inc.

P.O. Box 888 • Tangent, Oregon 97389

(503) 926-8886

Circle No. 137 on Reader Inquiry Card

Here's why the best superintendents can't

1 NEW BANNER® GIVES YOU LONGER LASTING CONTROL OF DOLLAR SPOT AND BROWN PATCH.

You know how quickly fungus diseases can wreak havoc in your greens. Which is exactly why Banner's new systemic, longer-lasting chemistry for turf has been so eagerly awaited.

Because of its systemic action, one spraying of Banner lasts 14 to 21 days on brown patch. And provides up to 28 days of excellent control on dollar spot at a 2 oz. rate.

2 SYSTEMIC, PREVENTIVE CONTROL.

Now you can stop disease before it gets started. Banner works systemically to control disease from the inside out. Once Banner is quickly absorbed by the leaf and root system, it won't wash off. It keeps on working after drying, unaffected by rain or irrigation.

Banner also goes on to prevent powdery mildew, rust, anthracnose, red thread and stripe smut.

wait to put Banner on the spot.

3 LOW RATES, LOW COST PER DAY, FEWER SPRAYS.

Banner's new chemistry is so powerful, just 1 to 2 ounces per 1,000 square feet is all you need.

These low rates and long residual mean lower cost per day of control. Less chemical, low rates and long residual also mean Banner performs with fewer applications which makes Banner the preferred treatment where environmental considerations are important.

Put Banner on the spot. And get longer lasting, systemic control of dollar spot and brown patch.

CIBA–GEIGY

© 1987 CIBA-GEIGY Corporation, CIBA-GEIGY, Ag Division, Box 18500 Greensboro, NC 27419. Always read and follow label directions. Do not use on warm season grasses, such as Bermuda grass, Bahia grass, or zoysia in AL, FL, GA, NC, SC, or the Gulf Coast area of TX, LA, and MS.

Circle No. 106 on Reader Inquiry Card

COVER STORY

BRINGING BACK THE GRASS

Damaged grass can be rejuvenated in any number of ways. Renovation through aerification and overseeding might cure your damaged turf.

by Jim Mello

Drum-type aeraters use the weight of a heavy tractor for good penetration. They will aerate a large area quickly.

In turfgrass management, the answers aren't always easy. Turfgrass managers may turn to the spray gun or spreader, but still not solve the problem.

Fertilizers, fungicides, insecticides and herbicides handle many problems, but they won't bring dead plants back to life. Renovation, through aeration, may be necessary.

The first step is to identify the problem. Ask yourself these questions:

Is the problem due to poor grass selection?

Is it due to improper cultural practices?

Is it due to insects, disease, thatch or compaction?

The next step is to weigh the alternatives. Should existing turf be killed? Will aerification and overseeding do the job? Should a slit-seeder be used?

Identify the problem

Improper variety selection can be the basis for turfgrass decline. Fine fescue, basically a shade-tolerant grass, will do well in the full sun of a cool climate, such as western Canada. However, when fine fescue is grown in the sun under warm temperatures, like southern California, it has difficulty surviving.

Warm-season grasses such as Bermuda or zoysia do well in the southern U.S., but they lose color north of the transition zone.

In New England, many old lawns have been seeded with common Kentucky bluegrass varieties. In the cool, moist climate, leaf spot disease flourishes, thinning out many turf areas. These areas should be renovated to improved bluegrass varieties, resistant to leaf spot.

Cultural practices

Improper cultural practices set the stage for many problems. Any procedure performed on turf which causes stress invites unwanted pests to attack the predisposed turf.

Close mowing, improper irrigation, poor fertilization practices, chemical injury, heavy wear, soil compaction, excessive thatch accumulation, extreme air temperatures and drainage problems are some of the stresses which weaken turf and encourage problems that have to be remedied through renovation.

A healthy lawn or fairway which contains a high percentage of broadleaf weeds or annual grasses can be corrected through the proper selection and application of herbicides. Applying a broadleaf herbicide or pre-emergence annual grass control can maintain that area weed-free.

Certainly this situation would not call for renovation unless the desirable grass species remaining are not maintaining a dense cover. In this case, the introduction of seed would provide new plants.

Other factors

Insect damage can seriously thin turf. Insects should be identified to learn what type of insects (sucking or chewing) and which plant parts are affected. For example, the greenbug aphid will attack the leaves of Kentucky bluegrass, piercing cells and sucking out the leaf juices.

Jim Mello is president of Nice 'N Green, Romeoville, Ill.

In many cases, the application of an insecticide in combination with nitrogen will stop further damage and promote new top growth. Seeding would not be necessary.

Damage to roots and crowns by white grubs, billbugs and ataenius will cause complete loss of turf areas. After an insecticide is applied to stop further damage, renovation is necessary to regain a healthy grass stand.

Be aware that not all damage by insects requires renovation. Give the turf a chance to recover and then renovate bare areas.

Diseases cause various symptoms in turf, ranging from slight discoloration to death. Whether total kill has come from fusarium blight in bluegrass, anthracnose in annual bluegrass or spring deadspot in Bermudagrass, the only solution to dead turf is replanting.

Fungicides are a great preventative tool, and the high cost can be justified when putting green quality maintenance is involved. But when we maintain large areas, such as home lawns or parks, the cost of fungicide use becomes prohibitive.

When cultural procedures, such as proper mowing and watering, cannot keep a turf area from fungal infection, rejuvenation through renovation becomes the most economical alternative. Proper diagnosis of the disease aids in selecting the proper varieties for the reclamation process.

A weed is simply an out-of-place plant. In Tulsa, Okla., annual bluegrass is a weed in a Bermudagrass lawn, but in Cincinnati, Ohio, Bermudagrass is a weed in an annual bluegrass fairway. Weedy grasses, such as quackgrass, annual bluegrass or nimblewill are objectionable because of their variations in color, growth habits and competitiveness. Once a perennial grass species invades, a nonselective herbicide must be used to kill the unwanted vegetation.

Renovation alternatives

Before starting to restore problem turf, examine alternative programs. If a golf course fairway needs renovating, would the program interrupt play?

If renovating a large area for a public park, how tight is the budget? Can the homeowner justify the expense involved in alternative renovation programs for their troubled landscapes?

Dethatching and overseeding

Many turf areas are being reclaimed through dethatching or power raking and overseeding. A dethatcher or power rake has a set of blades of spring teeth, which cut or comb the thatch, bringing it to the surface. To prepare a seedbed effectively, the seed must come in contact with the soil. Dethatchers will bring a great deal of debris to the surface, but if there is a severe thatch layer, the blade will not penetrate completely down into the soil.

Dethatching should be repeated, removing as much of the thatch layer

continued on page 24

Slitseeding to the rescue

Sometimes turf is so severely thinned that core aerification and overseeding will not provide enough plants to recover the declining area. In this case, the slitseeder can be used to incorporate seed in rows without completely stripping the area and starting all over.

The grass should be mowed short to reduce the debris brought to the surface. The slitseeder will bring matted grass and heavy thatch to the surface.

After the renovation is completed, this material should be raked or scraped up.

Whenever seeding is done, proper placement of the seed in contact with the soil should be given the utmost priority. If moisture, light and temperature favor germination, a seed may germinate in the thatch but its survival potential in this porous medium is low.

By using the slitseeder, seed-to-soil contact is assured. The machine has a set of blades in front which cuts grooves through the thatch down into the soil.

A set of disks located behind the blades keeps the slits open while seeds flow from a seed hopper through a small tube into the slits at the base of the disk.

The slits are two to three inches apart, close enough for the new plants to fill in rapidly. The slitseeder also cuts through the thatch layer, providing an avenue for the new seedling to grow through. This vertical cutting action also stimulates new growth.

Rhizomes and stolons of the existing turf are cut and new shoots grow from uncovered nodes and growing points.

New seed varieties can be incorporated without severe surface disruption. Slitseeding followed by core aerification provides excellent results because the surface has been mechanically modified to favor new growth and development. The seeding rate would vary depending on the various weights of the different species. The rate of seed flow is easily adjusted to compensate for seed size and weight.

An advantage is that the area renovated by slitseeding is never out of service. The area will look as if it has been renovated but it will still be firm and usable. In fact, entire fairways on golf courses have been changed from one variety to another without any interruption of play.

One disadvantage of slitseeding is the impatience of some people eager to have a beautiful turf area. A beautiful turf from seed or slitseeding takes longer than laying sod.

Your potential slitseeding customer must be informed that it will take the seed months to fill in and form a dense turf. The homeowner also should know they may have to look at weeds during the recovery period when herbicides can't be applied.

Another challenge to slitseeding is irrigation systems. You have to make sure they are not damaged. Marking all the sprinkler heads and valves with marking paint or short stakes makes visibility simple.

Timing

Timing of the slitseeding process is critical for proper establishment. Slitseeding cool-season grasses does not do as well in the spring as it does in the fall. Cool soil temperatures in the spring prolong the germination time and the existing sod grows vigorously during the cool, moist season.

The soil beneath the sod warms much more slowly than the bare soil which readily absorbs the sun's heat and light. The competition from the established grass reduces the chance for the new seeds to develop.

Pre-emergence herbicides to control spring and summer annuals cannot be applied because they will inhibit the growth of the new seedlings. The physical opening of the turf provides an opportunity for

continued on page 24

RENOVATION *from page 23*

at one time, without tearing out the entire sod layer. When a heavy thatch condition develops, crowns and other parts of the plant grow in the porous, organic layer, creating problems. The thatch, because of its physical nature, does not provide a satisfactory growth medium.

To dethatch an area totally, (removing all the dead organic matter), could leave the area with hardly any plant growth left.

By repeating the dethatching procedure many times, removing a portion of the layer each time, allowing time for recuperation between each dethatching, eventually the desired thickness of the organic layer will be reached.

This program involves many hours of labor for both machine operation and cleanup time. If the thatch layer is thick the seed will lay on top of the thatch and its potential for establishing itself is not great.

If the thatch layer is not thick, then the dethatching units can cut through and expose the soil for seeding. In this case, dethatching the area once to break up the layer and removing the debris is all that is necessary. Seed should then be broadcast over the entire area, and the dethatching process should be performed again to incorporate the seeds in the soil. One of the greatest benefits of the dethatching units even when they can not fully penetrate the thatch area is their vertical mowing action.

Once the thatch depth is under control, routine dethatching will keep the layer to minimum reducing plant stress. Dethatching, however, does not have any effect on relieving soil compaction in established turf. This can only be accomplished through aerification. Dethatching should be scheduled for fall, reducing the incidence of annual grasses and broadleaf weeds.

If a pre-emergence crabgrass herbicide has been applied the cutting action of the dethatcher will break this barrier and bring about a potential weed problem.

Dethatching is one form of renovation which should be used as a preventative measure rather than a cure for heavy thatch. To reduce a two-inch thatch layer properly to a quarter inch or to prepare a favorable seedbed requires numerous efforts.

Core aerification

Interfacing soil problems, heavy thatch and poor rooting hinder the normal growth and development of a sodded area. Reduction of these stresses can be achieved through core aerification on a yearly or bi-yearly schedule. Core aerification involves the removal of a soil/thatch core two to three inches deep over the entire problem area. Coring breaks up the thatch layer, allows water to penetrate into the root system and gases to flow freely in and out of the root zone. Coring breaks up the serious interfac-

continued on page 26

SLITSEEDING *continued from page 23*

weed seed to grow and develop.

Post-emergence herbicides should not be applied because of damge to the young seedlings. If you live in an area where summers are hot and dry, the young seedlings which germinate in late spring will not have developed their root systems.

Their survival through stress periods, therefore, depends on faithful watering to keep them alive. This could mean numerous waterings, perhaps even daily, if drought and high temperatures persist.

Slitseeding in the fall is best. Pre-emergence and post-emergence herbicides can be applied in the spring. In late summer when cool-season grasses are growing slower (which will reduce their competition with the new seedling) the high temperatures will promote rapid germination. The cool and moist fall period provides a favorable environment for the young seedling to survive.

Both pre- and post-emergence chemicals can be applied the following spring since the plant will have matured.

By the time the summer stress period approaches, the plant will have a developed root system, which requires less water and is prepared to face the heat and drought. An old diseased or insect-riddled turf area now takes on new life as the improved varieties take over.

Slitseeding can help revive worn areas on athletic fields.

Warm-season grasses

Warm-season grasses in the South are often overseeded during winter to provide a green turf full-season. The strong lateral growth of Bermuda grass, zoysia and St. Augustine grass, benefits greatly from annual vertical mowing. Using a slitseeder, the vertical mowing and the overseeding can be done in one operation.

By using the slitseeder, different varieties can be used by simply adding the seed to the hopper. Shade areas can be seeded with shade-tolerant grasses, while heavy-wear areas can be seeded with wear-tolerant species.Selecting the right seed for environmental conditions assures success in establishment.

—Jim Mello

The closer you get, the better we look.

Introducing the new Greensaire® 24.

No aerator on the market lets you aerate greens as effectively with less maintenance for as many years as the new Greensaire 24. Only with its unique crank and cam action do tines go vertically in and out — virtually eliminating elongated holes with side compaction and ridges. The 2″ x 2″ pattern delivers more holes per square foot than our competition — 75,000 more holes on the average 7500 sq. ft. green.

The result is a smoother putting surface and better root development.

Now with less maintenance.

New seals, shafts, and slide and guide bearings give you at least three times the normal operating life. Push rod bearings are internally self-lubricated to eliminate grease fittings and routine maintenance. So, you'll reduce your downtime while saving service time between the greens — getting golfers back on the course quickly.

No one knows aeration better than Ryan — leaders in the industry for 30 years. For a closer look at the new Greensaire 24, contact your Ryan dealer and ask for a free demonstration. Or call toll-free: 1-800-228-4444.

RYAN®

BUILT TO LAST

6085 Cushman, OMC-Lincoln, P.O. Box 82409, Lincoln, NE 68501

Circle No. 110 on Reader Inquiry Card

© Outboard Marine Corporation, 1987. All rights reserved.

Spoons or tines?

It's a question that faces many landscape managers. Proper aeration is an important turf management practice, one with numerous benefits. Finding the right aerator for a particular job can be the key to proper aeration.

There are two basic types of coring devices: the open spoon tine and the closed, hollow tine. With aeration, says Paul Harder of Prescription Turf Services, Middleton, Mass., the primary concerns should be the number of cores per square foot and the depth.

From a turf management standpoint, he doesn't see much difference between the two types of tines. However, he does say the open tines are more useful when doing slicing or overseeding because they bring up more soil which acts as a top dressing.

The major difference seems to be cosmetic. The hollow tine makes a cleaner hole. "I favor the hollow tine because it does a neater job," Harder says. "When the job is done it looks clean."

Jerry Faulring of Hydro-Lawn in Gaithersberg, Md., echos this feeling. He has used both, and, he says they do a comparable job. Again the only difference is cosmetic.

"A spoon kicks out the core better," says Stan Zontek of the USGA Green Section in West Chester, PA.

Brian Bossard, field manager at San Diego's Jack Murphy Stadium, prefers spoons. "They keep clean better." He adds, though, that hollow tines make a cleaner hole. He uses half-inch hollow tines on the stadium field.

The depths of hollow and open don't seem to vary much either, notes Harder. Penetration depth is dependent of soil conditions at the time of aeration. If the ground is hard, neither type of tine will penetrate well.

A problem arises just below that aeration zone, though, Zontek says. At about four inches deep, researchers have found a layer of compaction caused by the aeration. A task for researchers in the future, Zontek says, will be to develop an aerator that can break up that layer.

He says slicers with blades much like Bowie knives, nine-inches long, are being experimented with in Europe.

And while the perfect aerator has yet to be developed, a number of researchers are taking a poke at it. Results should be coming out soon.

—Jeff Sobul

ing problem of soils with unlike physical properties.

The greater the porosity the more room for the roots to grow and develop. In a tightly compacted clay undersoil, roots have very little room to grow. The roots prefer to stay at the surface in the porous peat or loam soil brought in with the sod. Core aerification creates large pore spaces which rapidly fill in with turf roots. This greatly increases the turf's vigor, drought tolerance and overall health.

Large core aerification units are available for vast turf areas such as parks and fairways. On the home lawn, a smaller unit is needed to maneuver the equipment in tight places. The unit should also be capable of being raised or lowered for driving over sidewalks and curbs.

To properly core aerify, the unit must have the capability of penetrating deeply. The soil should be moist to provide the deepest penetration. Dry soil does not permit this and aerating wet soil can make quite a mess.

Heavy, fine-textured clay soils are more difficult to penetrate than sandy loam soils. Many core aeration units are on the market, but you must select the one which is capable of penetrating the particular soil to be aerated.

Drum-type aerators work fine as long as enough weight is provided.

Roots do not grow in soil; roots grow in spaces between soil particles.

The punch-type aerators are not dependent on weight and usually offer the best aeration; however, it requires more maintenance to keep them operating.

With the sod fully opened, overseeding efforts will provide excellent results because the seeds will come into contact with the soil. The soil cores brought to the surface are broken up by rains and provide a top dressing rich in soil microorganisms which biodegrade thatch into valuable plant nutrients.

The soil brought to the surface also makes a favorable seedbed into which new varieties can be incorporated. This process should not be called dethatching, but more appropriately thatch modification. The intermingling of the soil with the thatch favors decomposition and alters the physical structure of this organic layer. With soil core removal water can now penetrate the surface easily, fertilizer can more more readily to the root system and gases and heat exchange can take place. New varieties of turf can be incorporated for a move away from the less desirable monoculture and toward better disease resistance.

With warm-season grasses, the benefits also include a source of new plantings. Each soil core removed contains viable nodes which can give rise to new plants. These sprigs can be collected and used to establish grass in problem areas or in new places where vegetation is needed.

Golf course superintendents have established nurseries by collecting these plugs, piling them two to three inches deep, raking them level, rolling, fertilizing and watering. New growth begins immediately.

Core aerification done on a routine basis can help to restore many declining turf situations. Coring should be considered before reaching for a solution on the chemical shelf.

Shatter core aeration

Shatter core aeration (solid tines) is relatively new. It involves the penetration of the thatch soil zone without the removal of a core. This can be used as an immediate remedy to a severe thatch layer or poorly drained tight soil to open up the surface and allow for infiltration of water, nutrients or pesticides.

It does not relieve compaction but it has a shattering effect which, depending on soil type, may stimulate growth. More research work needs to be done in this area and more reports from the field are needed to assess the benefits to turf from shatter core aeration.

At some point all turf professionals must deal with the challenge of declining turfgrass. By sharing ideas at seminars, field days and conventions, we can keep up with our growing and everchanging field and upgrade the professionalism in turfgrass management. **LM**

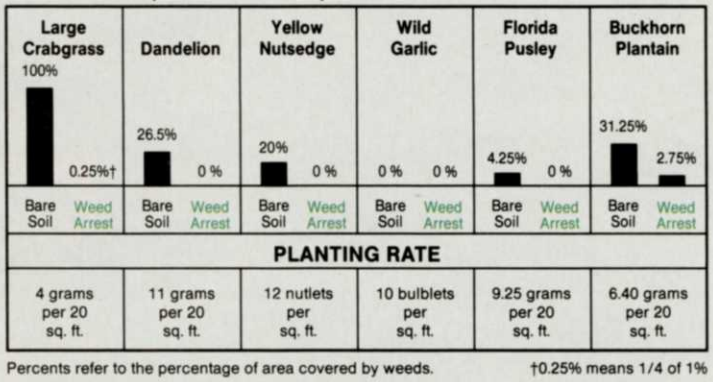
Introducing Warren's® WEED ARREST™ STOP

MULCH UNDERLINER

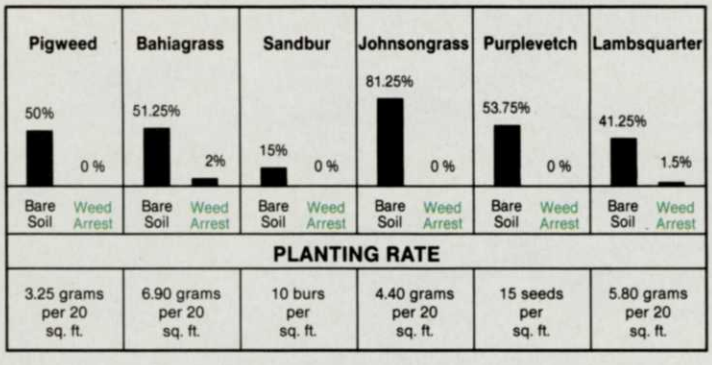
University tests prove it does a better job controlling 12 of the toughest weeds in the business.

It's also the only *100% polyester** weed control fabric that meets the tough standards of today's turf professionals.

Test conducted by Clemson University.



Percents refer to the percentage of area covered by weeds. †0.25% means 1/4 of 1%



There are 5 important reasons new Warren's WEED ARREST mulch underliner is the best premium weed control fabric you can use:

WEED ARREST does a better job and lasts longer . . . because it's 100% premium *polyester* (not polypropylene), it resists the sun and the soil environment and harsh chemicals far better. The mulch areas on your jobs will stay cleaner years longer than your competitors' who make do with polypropylene fabrics or inferior plastic products.

WEED ARREST is easier to handle and install . . . because of its 100% needlepunch bonding, it's extra strong yet soft and flexible so you can install it faster. It also conforms and sticks to landscaped contours better than old-fashioned heat-bonded fabrics that are stiff and hard-to-handle.

WEED ARREST helps keep mulch in place . . . because of its high coefficient of friction, bark, wood chips and other mulches stick to it better. So it does a lot better job combating mulch erosion on tough grades.

WEED ARREST lets water pass thru FAST! . . . because it's needlepunch bonded (not high-temperature bonded between high-pressure rolls), water, fertilizer and air pass through it easily so soil and plants stay healthier!

WEED ARREST saves you money on every job . . . because it's easier to install, conforms to terrain better, holds mulch better, does a far better job controlling weeds and lasts years longer, your jobs go in faster and hold their beauty . . . *plus* you'll continue to save time and money because you'll have fewer callbacks and less costly rework with Warren's new WEED ARREST mulch underliner.

Before you buy any weed control fabric, compare it with Warren's new WEED ARREST mulch underliner.

Ask your Warren's Turf Professional for your FREE WEED ARREST sample or call the TOLL FREE number listed below.

WEED ARREST mulch underliner is now available from Warren's distributors throughout the U.S. Call us for the name of the stocking dealer nearest you. Call 1-800-828-TURF (8873) In California call: 1-800-828-8882.

*Made from Trevira® (Reg. TM of Hoechst AG)

"It always costs less to put in the best."

Warren's®

TURF PROFESSIONALS

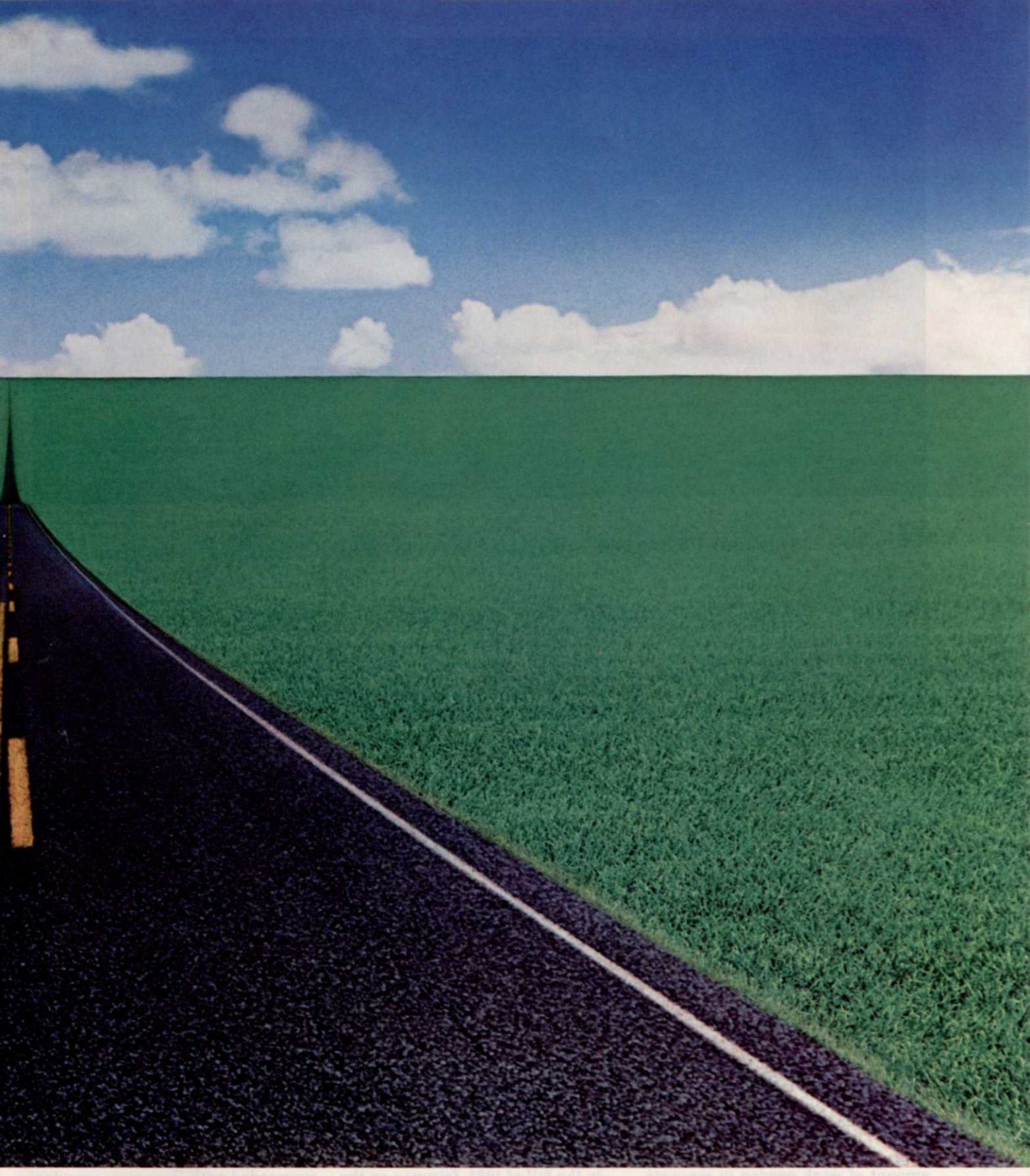
Corporate Offices: Crystal Lake, Illinois 60014

For specific product information contact: Warren's Seed & Special Products Division, P.O. Box 459, Suisun City, CA 94585

7946-5/87

Circle No. 151 on Reader Inquiry Card

Covers a lot of ground for less.



Bayleton®

Its low cost looks good on paper. And its long-lasting turf disease control looks good on your fairways. BAYLETON turf fungicide. For the long haul.
Mobay Corporation, Specialty Products Group, Box 4913, Kansas City, Mo. 64120

BAYLETON is a Reg. TM of Bayer AG, Leverkusen. 6-2256

Circle No. 127 on Reader Inquiry Card

Crews prepare the 12th green on the North course for reseeding. Every green on the North course was renovated.

A CHALLENGING COURSE

Olympia Fields' two courses have presented more challenges for the superintendent than they have for the golfers.

by Jeff Sobul, assistant editor

Brian Chalifoux might as well have started from scratch. He practically did anyway.

When he took over as superintendent at Olympia Fields Country Club in the fall of 1983, he had no idea of the amount of work needed to renovate the club's two courses. But when the courses started showing signs of Toronto C-15 bentgrass decline, he started getting notions. Three years and two renovation programs later, the task continues.

Major project

In those three years, Chalifoux and his staff of 12 full-timers and 40 peak season employees have completed fairway renovations on both the North and South courses and complete tee and green renovation on the North course.

In the fall of 1984, fairways on the North course were about 50-50, bentgrass to poa annua. South course fairways were 65 or 70 percent bentgrass, Chalifoux says. North course greens weren't any better.

"We were in a situation on the greens where we had C-15 decline and we didn't have much choice in the matter. We had to go in and renovate," Chalifoux says. "What weren't problems with C-15 were problems with predominantly poa annua greens which were getting very difficult to maintain."

All the greens were stripped, the soil loosened and fumigated, and then overseeded with Penncross creeping bentgrass. Applications of starter fertilizer, hydromulching and irrigation followed.

The greens have come up nicely, but not without a few headaches. "On the negative side of doing these projects is that the membership is generally looking for something instant," he says.

Continued on page 32

MAVRIK.® ALL THE AMMUNITION YOU NEED.

Insect and mite protection from tee to green.

MAVRIK AQUAFLOW® Insecticide is a broad spectrum insecticide and miticide—in fact, it eliminates practically every problem except divots.

MAVRIK goes after pests that live in turf, in shrubs, in trees. It kills chinch bugs, sod webworms, mites, cutworms, leaf feeding caterpillars, aphids, whiteflies, leaf beetles and others.

There has never been a single product that handles so many pests, while being so safe to plants, convenient to use and easy to apply. MAVRIK is a non-restricted material, and it has been tested on more than a hundred ornamental species without a report of any phytotoxicity.

MAVRIK is a water-based flowable, so it's easy to mix. There is little residue and no odor—you can use it Friday afternoon and the members won't get their noses out of joint over the weekend. After a spray has dried, it's easy on bees. And it won't harm bird species.

You won't find the convenience and broad spectrum coverage of MAVRIK in any other product. And since MAVRIK is available at your local distributor, all you have to do is ask for it.

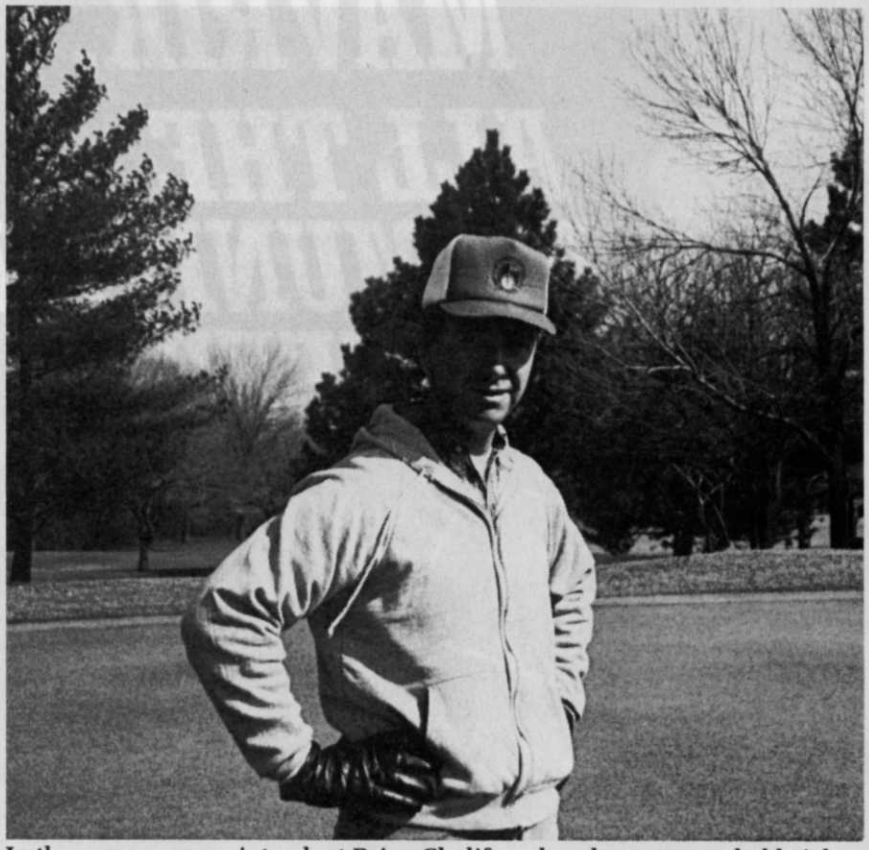
SANDOZ CROP PROTECTION

Use pesticides effectively. Read and follow label directions carefully.

© 1987 Sandoz Crop Protection Corporation
MAVRIK and MAVRIK AQUAFLOW are trademarks of Sandoz, Ltd.

Circle No. 141 on Reader Inquiry Card

OLYMPIA *from page 30*



In three years, superintendent Brian Chalifoux has done a remarkable job in renovating both courses at Olympia Fields Country Club.

"Your grass is covered and you've got a good stand of turfgrass but they don't understand that it's going to take a minimum of three years for the Penncross to mature. We've had a few problems where the heavy play and heavier soils on our greens were slowing this process."

However, most of the North course grasses have come in—but not without some problems, of course. "The failures we had last year were mainly related to shade," Chalifoux explains. "Two of the greens were on poorly drained and heavier type soils. And one of them was 3,500 sq. ft. You're looking at a green that just couldn't handle that much play." (The two courses handle about 50,000 rounds annually.)

"We're still going to have problems growing grass (on the No. 4 green). I think we can do it with some changes in management. Everything is going to have to be right."

The fourth green on the North course was not reconstructed though Chalifoux admits it probably should have been. Instead they have tried to help it in other ways such as pruning trees and actually removing four or five oaks from its vicinity.

Oak pruning is, by and large, contracted out. A thousand have been done so far, but, Chalifoux says, that hasn't even made a dent toward doing all of them. "We're hoping to get up in about the 50 percent sun range throughout the day," he notes. Along with reducing the shade on affected greens, management practices have been changed to prevent compaction. "The other thing is strictly hand-cutting in these areas: greens, collars and approaches with 22-inch Jacobsen mowers."

Also, the mowing, aerifying and top dressing patterns have been changed. "It's strictly straight runs turning off the greens for both aerifying and top dressing."

Questions and answers

The biggest question facing Chalifoux when he closed the North course in August, 1984, was whether the course would be ready for play in the spring of 1985. "(Course management) wasn't sure that this project could be completed because we were doing so much," he remembers. "They were questioning whether or not we could get the golf course opened back up again the following spring—which was legitimate because I wasn't even sure myself."

The answer was yes, but with a bit of luck. Chalifoux figured he would need to have seed down by Sept. 1 to give the course a fighting chance. The problem was not getting the course prepped for seeding. It was buying seed.

Bentgrass was in short supply, so he had to scramble to get the last 2,000 lbs. of Penneagle for the fairways. (He used 4,000 lbs. of Penneagle for fairways, 500 lbs. of Penncross for tees and greens.)

Everything seemed to be going his way, too. The weather held and extended the growing season well into December. On top of that, spring came early and mildly, and after excellent growth in April, the North course opened May 18, 1985, about two weeks ahead of his schedule.

Going south

Renovation on the South course is not as extensive as on the North. "I don't think we're in a situation on the South course where we have forced improvements," Chalifoux explains. "The North was in a situation where it was forced improvements."

One of his major concerns has been bringing the bentgrass ratio up to overtake the poa. In conjunction with overseeding of the aggressive bent, he has been experimenting with Cutless and Scott's TGR to chemically control the poa.

"With the low percentage of poa on the South fairways, we're going to be taking somewhat of a chance applying chemicals before fairways are totally closed in, he explains. "If we suppress the poa at this time, the bent is going to be that much more aggressive and our percentages are going to go higher a lot faster."

He and his staff also renovated seven bunkers last fall and plan to continue this year. The program calls for improved drainage, re-grading and re-sodding around the edges.

They've also finished upgrading cart paths on the North course and have begun on the South course. Some needed repaving and all needed widening, to at least eight feet.

With fairway and green renovation on the South course for the most part complete, the tees remained. Many were mostly poa. "We were having trouble growing grass on them," Chalifoux recalls. "Switching over to the bent, we're able to keep them much drier, and the golfers aren't tearing them up near what they used to.

"They're nice firm tees now. The members call them 'hard tees,' but the wear and tear is much less. It's worked out well.

"This is our turning year here. This will be our third year on the new grass and I think we're pretty much out of the dark now and we should have excellent conditions this year." **LM**

Fine Fescue for Sure

Maintaining a fairway can be a real headache. Fine fescues give you less to worry about...

Keeping your course looking great and your budget balanced can be a real headache. Oregon grown fine fescues can make your job just a bit easier. When used on tees and fairways, fine fescues offer shade tolerance with low fertilizer and water requirements. Fine fescues mix well with ryegrass and bluegrass without getting pushy, and they have a tight, upright growth habit. Oregon fine fescues germinate and perform better than imported varieties.

Where do you *find* fine fescues? On tees, fairways, roughs, parks, home lawns, industrial campuses and anywhere a fine textured, shade tolerant turf is desired.

Where do you *get* fine fescue? Ask your distributor for *Oregon grown* fine fescue *for sure!*

For a series of eight tech sheets on Oregon grown Chewings and creeping red fescues, call or write

OREGON FINE FESCUE COMMISSION
2140 Turner Road SE
Salem, OR 97302
503/585-1157

Circle No. 135 on Reader Inquiry Card

© 1987 O.M. Scott & Sons Co.

What The Average Person Considers An Eyesore On The Golf Course.

Just the sight of Poa annua makes us cringe. And it seems to never go away.

So after putting our ears to the ground and our best minds in the lab we discovered a beautiful solution. Our remarkable new TGR™ Poa Annua Control.

Scotts patented TGR technology weakens Poa annua on fairways and bentgrass greens, while controlled-release fertilizer helps desirable turf thrive and overtake the Poa.

But most important, the transition to desirable grasses is gradual. So there's not a

What A Scotts Tech Rep Considers An Eyesore On The Golf Course.

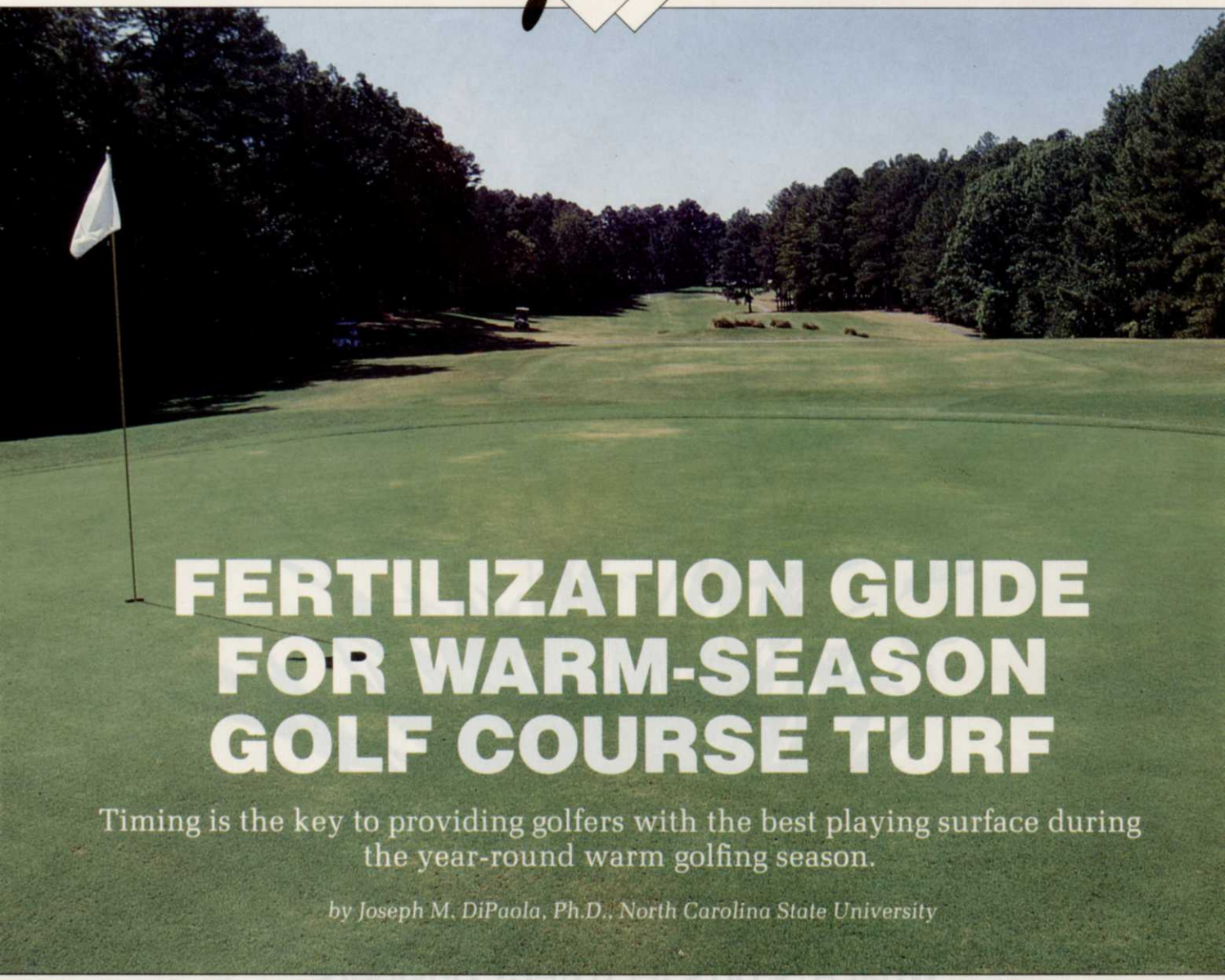
sudden change in playing surface conditions.

Ask your Scotts Tech Rep to help you incorporate TGR Poa Annua Control in your turf management program.

At least you'll have one less ugly problem to worry about.

For more information contact your Scotts Tech Rep or simply call 1-800-543-0006. In Ohio call collect 513-644-2900.

Scotts® ProTurf®



FERTILIZATION GUIDE FOR WARM-SEASON GOLF COURSE TURF

Timing is the key to providing golfers with the best playing surface during the year-round warm golfing season.

by Joseph M. DiPaola, Ph.D., North Carolina State University

Superintendents should implement a solid fertilization program in order to maintain good green color on the course.

As summer draws to a close and the cooler weather of fall approaches, golf course superintendents look forward to some annual activities like aerification, winter overseeding, lime applications, renovation and fertilization.

While fulfilling these management procedures, superintendents must also contend with the usual increase in the play of the course, including tournament events. Keys to playable turf are:

- balancing a fertility program to ensure adequate growth to withstand the wear of increased play;
- minimizing the very real risk of winter injury from excess fertilization of warm-season turf; and
- encouraging the germination and development of winter overseeded grasses with fertilization, which can also increase Bermudagrass growth and thus its competition with cool-season overseedings.

The difference between success and failure often depends on a superintendent's timing of agronomic practices, particularly in relation to environmental conditions.

A good beginning point for planning a late-summer and fall fertility program is to review nutrient and soil pH status record. It is also advisable to double-check the area of the greens, tees and fairways. Inaccurate judge of their size, which has a tendency to change over time, can result in significant over- or under-applications of nutrients. Soil sample collection at this time also avoids delays in receiving laboratory results typically experienced in the spring.

After adequate soil phosphorus, potassium and pH levels have been attained, greens should be sampled annually, tees every one to two years and fairways every two to three years.

Minimizing winter injury

Centipedegrass, bahiagrass and St.

Augustinegrass have only poor to moderate resistance to cold damage; Bermudagrass has intermediate cold tolerance; zoysiagrass is the most low-temperature hardy of the warm-season turfgrasses. Advantageously, Bermudagrass and zoysiagrass have deep rhizomes which typically avoid exposure to low temperature because of their below-ground location. Warm-season turfgrasses without these underground lateral stems cannot fully benefit from protective insulation offered by the soil.

A healthy turf tolerates more types of stresses. Fertilizing under-nourished turf before stress exposure will typically enhance performance. However, once an adequate nitrogen level has been established, undesirable turf responses to additional fertilization are likely. Nitrogen, phosphorus and potassium fertility ratios of 3-1-2 or 4-1-2 should be sought; however, a specific application may need to vary, to compensate for actual soil nutrient levels.

Unlike cool-season grasses, increasing nitrogen fertilization during the fall increases the risk of winter injury to warm-season turf. Nitrogen applications to warm-season turfgrasses at or above 1 lb. N/1000 sq. ft. after October promote leaf development from the crown when the metabolism of this structure should be hardening.

This new flush of growth has resulted in turf winter injury by increasing the temperature at which the turf is injured during the winter. However, like cool-season grasses, fall nitrogen applications will prolong the fall color retention and speed the turf's spring greenup.

Many fertilizer sources including sulfur-coated ureas, ureaformaldehyde reaction products, IBDU, etc., have yet to be evaluated for their impact on winter injury of warm-season turf following fall applications.

Potassium deficiency can result in a weak stand of turf because this nutrient is critical for maximization of cold hardiness, disease resistance and drought tolerance of the turf. Adequate levels of potassium encourage the development of a deep and extensive root system.

Winter injury is a problem for all warm-season turfgrasses, but is of particular concern for northern regions of the transition zone of turf adaptation. Maximizing winter survival will minimize weed infestation and reduce the turf's spring renovation requirements. Potassium applications at 1-2 lbs./1000 sq. ft. have enhanced cold hardiness, but do not alter fall color retention. Late summer potassium applications will increase the availability of this nutrient at the beginning of the hardening process.

While phosphorus applications have not been found to influence the cold hardiness of warm-season turfgrasses, a high P-to-K ratio has been observed to increase the winterkill of centipedegrass. This response demonstrates that the balance between nitrogen, phosphorus and potassium is important for turf quality and winter survival.

Cold hardiness following fall nitrogen fertilization can be enhanced by including phosphorus and potassium.

Foliar application of iron has been used to improve turf color without the shoot growth stimulation that follows nitrogen fertilization. This color enhancement can occur even in the absence of iron deficiency symptoms (eg. interveinally chlorotic younger leaves). Iron salts (eg. ferrous sulfate) and chelated sources (eg. Agri-Plex, Extra-Iron, Ferriplex 138, Rayplex, Sequestrene 330) are typically applied at 2-8 lbs. of elemental iron per acre (0.75 to 2 oz. of iron per 1000 sq. ft.).

Iron salts are usually a less expensive treatment. Exercise care however, when applying iron near sidewalks, cartpaths, markers or other objects to avoid staining. Washing immediately after application will minimize staining.

Nitrogen fertilizer applications to warm-season greens, tees and fairways should be gradually diminished at about 60 days prior to the first normal frost. The fertilization requirement of greens exceeds that of tees and that of tees exceeds that of fairways, largely because of the increased demand for greater recuperative rate, clipping removal, more intensive irrigation and sandy soil profiles.

Overseeded turf requires fertilizer applications from fall through spring if optimum turf quality and color is to be maintained. Fertilization rates generally should not exceed 0.5 lb. N/1000 sq. ft. and be repeated every four weeks. Applications should be delayed until the overseeded cool-season grasses have germinated and have been clipped in order to minimize Bermudagrass competition.

Turfgrass fertilization remains as much an art as a science. Decisions on application rates and sources of nutrient carriers are made based on subjective color assessments by the superintendent, budgets and the club schedule as much as they are on the turf's agronomic requirements. How-

FALL NITROGEN GUIDE FOR WARM-SEASON GOLF TURF

	August	September	October	November	December
	---------- lbs nitrogen/1000 sq. ft. ----------				
Greens	0.75-1.5	0.25-0.5	—	—	—
Hybrid Bermudagrass	0.75-1.25	0.25-0.5	0.25-0.5	0.25-0.5	0.25-0.5
Overseeded Bermuda					
Tees	0.75-1.25	0.25-0.5	—	—	—
Hybrid Bermudagrass	0.5-1.0	0-0.5	—	—	—
Common Bermudagrass	0.5-1.0	0-0.5	—	—	—
Vamont Bermudagrass	0.75-1.0	0.25-0.5	0.25-0.5	0.25-0.5	0.25-0.5
Overseeded Bermuda					
Fairways	0.3-0.5	0-0.3	—	—	—
Hybrid Bermudagrass	0.25-0.3	0-0.25	—	—	—
Common Bermudagrass	0.25-0.3	0-0.25	—	—	—
Vamont Bermudagrass	0.3-0.5	0.25-0.3	0.25-0.3	0.25-0.3	0.25-0.3
Overseeded Bermuda					
Roughs	0-0.3	—	—	—	—
Common Bermudagrass	0-0.25	—	—	—	—
Bahiagrass	0-0.1	—	—	—	—
Centipedegrass					

The higher application rates are suggested for irrigated areas that have clippings removed, particularly for turf on sandy soils. These suggestions are only offered as a guide. Courses located where the first normal frost occurs before or after the first week in October should shift the calendar to the left or right, respectively.

WARM-SEASON FERTILIZATION *from page 37*

ever, the many nitrogen fertilizer carriers now available, particularly slow-release sources, have enhanced program flexibility. Fall fertilization programs are largely driven by the need to prepare the warm-season turf for overseeding or for maximum winter survival while dormant.

Southern bentgrass

The growing season for bentgrass greens in the South is shorter than the time between killing frosts. Bentgrass golf greens grow very little during the hot, humid summer months typical of the southern United States. The bentgrass root system will usually become increasingly shallow throughout the summer, so it is critical that root system development be maximized by late-spring.

Supplemental spring applications of potassium at 1 lb. K/1000 sq. ft. can substantially improve bentgrass rooting.

During the course of a year, bentgrass greens may receive between 5-10 lbs. of nitrogen per 1000 sq. ft. depending upon many factors. Newly-constructed greens typically need nitrogen applications at the upper end of this range. Slow-release fertilizers used during the late-summer and fall should not exclusively contain nitrogen sources that need microbial activity for nutrient release (eg. ureaformaldehyde, activated sewage sludge). Declining soil temperatures during the fall and winter will limit nutrient availability from these sources. Also, nutrient release may occur the following summer when the superintendent wishes to minimize nitrogen levels for reason of heat stress and disease.

Late summer and early fall in much of the southern United States can include many very warm days interspersed with cool spells. Superintendents should resist the urge to quickly aerate, top-dress and fertilize bentgrass greens until cool weather is assured. Waiting until soil temperatures have dropped to near 70 degrees F. is a more reliable guide than air temperatures.

Aerating the greens accelerates soil drying which can increase the water stress experienced by bentgrass during late summer.

Fertilizer applications should not accompany top dressing and drag matting at this time of the year. Placing fertilizer salts on bentgrass leaves during late summer—while this turf's root system is most shallow—will further aggravate water stress should warm weather return. So, if tournament schedules and other factors necessitate an earlier-than-desirable aerfication, fertilizer applications should be conducted in a separate operation.

LANDSCAPE *Guide* MANAGEMENT

FERTILIZATION GUIDE FOR COOL-SEASON GOLF COURSE TURF

Golf course superintendents must rely on their powers of observation, and experiment with different fertilization practices.

by David Wehner, Ph.D., University of Illinois

Turfed areas are unique. They must withstand traffic, repeated mowing, attack by disease and insect pests and, at the same time, provide a dense, dark-green covering of the soil surface. One of the most important management practices that helps ensure that the turfgrass plant is able to do its job is proper fertilization.

Because each turfgrass area is different, and each turfgrass manager has a different idea of what is considered acceptable, a single program cannot be written for all areas.

Instead, turfgrass managers should rely on their powers of observation to determine the desired results and experiment with modifications to discover better ways of producing those results.

Nitrogen fertilization

Turfgrasses require 16 elements for adequate plant growth. Of these, nitrogen (N) is supplied by fertilization in the largest quantities, followed by potassium and phosphorus. Nitrogen sources are characterized by their rate of nutrient release.

Water soluble N sources such as urea, ammonium nitrate and ammonium sulfate provide a short, quick response. Slow-release N sources such as ureaformaldehyde, sulfur-coated urea, IBDU and Milorganite will last longer because they are re-

continued on page 42

For the long run.

Introducing a powerful new force in riding rotary mowers.

Now there's more to Cushman® Front Line® Mowers than top cutting performance. More power. More operator comfort. More endurance.

Now there's the new diesel-powered model Cushman 807.

Its totally integrated power train and new hydraulically-powered steering gives you unmatched performance over the long run. The 807 dispatches thick, wet grass on tricky maneuvers around obstacles without losing ground speed. No other rotary mower gives you a cleaner cut.

At the heart of the new, four-wheel 807 is a powerful 21.5 horsepower, 3-cylinder Kubota 950 diesel engine. We've also included a heavy-duty Donaldson air cleaner and a new, heavy-duty Cushman PTO clutch to keep your new Cushman Front Line running longer. A complete family of Cushman Front Lines and a wide range of accessories are available to meet all your needs all year 'round. Choose a 3 or 4 wheel design with 60- or 72-inch side or rear discharge mower deck. Or add the exclusive Cushman Grass Caddy™ system, which lets you cut, catch, and hydraulically dump 16 bushels of clippings without leaving the seat.

For a convincing demonstration contact your Cushman dealer today. Or call toll-free: 1-800-228-4444.

CUSHMAN®

BUILT TO LAST

3264 Cushman, OMC-Lincoln, P.O. Box 82409, Lincoln, NE 68501

© Outboard Marine Corporation, 1987. All rights reserved.

Circle No. 109 on Reader Inquiry Card

Price Cut Again!
Excludes quarts. See your distributor for details.
ANOTHER
Dave's Landscaping
Lawn Renovation
WITH
Roundup

THE SIGN OF A GROWING BUSINESS.

WHEN YOU RENOVATE WITH ROUNDUP®, YOU CAN GET BETTER RESULTS, MORE SATISFIED CUSTOMERS, MORE BUSINESS.

Look at it this way; if you can deliver a service that will make a lawn go from spotty to spectacular every time out, you can't help but add to your business. Your work will speak for itself.

With a renovation using Roundup® herbicide, you *can* deliver that quality of service. Because nothing prepares the ground better. Roundup gets rid of old turf, weeds and all, roots and all—so it won't grow back. That helps the new lawn get off to the cleanest, best start possible. The result: a lush, dense, weed-free lawn.

What's more, Roundup is environmentally sound. It's biodegradable and essentially nontoxic to people, pets and wildlife. It won't wash or leach in the soil. So you can spray over root zones of desirable vegetation.

FIRST-CLASS RESULTS ARE AS EASY AS ONE-TWO-THREE.

One: Spray unwanted areas with a 2% solution of Roundup. Wait 7 days for old turf and weeds to die.
Two: Prepare for reseeding. Dethatch, if necessary, then core, vertical mow or spike to assure good seed-to-soil contact. Level and rake.
Three: Re-seed and water.

When that weed-free, healthy new turf comes up, your customers and all their neighbors will see the difference Roundup can make. You can see a difference, too—on your bottom line. Because higher quality renovations can command higher fees.

Better lawns, more satisfied customers, more referrals, bigger profits; any way you look at it, renovating with Roundup is the sure sign of a smart businessman.

FOR YOUR FREE LAWN RENOVATION GUIDE WITH ROUNDUP, CALL TOLL-FREE 1-800-332-3111

ALWAYS READ AND FOLLOW THE LABEL FOR ROUNDUP HERBICIDE.
Roundup® is a registered trademark of Monsanto Company.
© Monsanto Company 1987.
RIP7104D

Monsanto

VERSATILE EFFECTIVE

Circle No. 130 on Reader Inquiry Card

COOL-SEASON FERTILIZATION

from page 38

leased at a slower rate. Slow-release N sources are more expensive even though quick-release sources may be applied more frequently.

The turfgrass manager should evaluate several sources to determine what type of results fit the budget. Almost any fertilizer, used properly, can provide good results. More expensive fertilizers do not necessarily provide better results.

Cool-season turfgrasses exhibit their maximum growth rate in the spring and fall. Growth slows over the summer because of higher air and soil temperatures. The typical fertilization program on lawns, parks and other turf areas is adjusted to provide more nutrients in the fall and spring than in the summer. A complicating factor on the golf course is that more rounds of golf are played during the summer than in any other season. The superintendent must watch his greens and tees to make sure that there is some turfgrass growth over the summer to ensure recovery from wear.

Fairways are less critical because the traffic is spread out more. Summer fertilization can be done by either applying small amounts of a soluble fertilizer on a frequent basis or by using a slow-release fertilizer. The total amount of nitrogen applied to the putting greens will partially depend on the number of rounds played and the emphasis on putting green speed.

As rounds increase, the amount of nitrogen applied must be increased. Where putting green speed is important, use frequent applications of top dressing along with a moderate N level, moderate mowing height and moderate irrigation practices to increase speed. Fast greens are difficult to maintain where the amount of play is heavy and the N level has been reduced.

Superintendents in the Chicago area have observed that Penneagle creeping bentgrass greens require a higher level of nitrogen than Penncross or Toronto greens to provide good quality. They are going in the opposite direction with their Penneagle bentgrass fairways. Good results, that is less competition from annual bluegrass, have been observed on these fairways using lower levels of nitrogen.

Some golf course superintendents apply a small amount of urea to the greens when they apply a fungicide. If the urea is being applied with a contact fungicide, and irrigation is withheld to allow the fungicide to work, then some of the N will be lost by ammonia volatilization resulting in an inefficient application.

Apply the urea when a systemic fungicide is being applied and watered in or apply the urea by itself and water it in. Many superintendents are reluctant to use a liquid fertilizer on their putting greens.

Several liquid fertilizer products being used by the lawn care industry have a place on the golf course. They can be applied with a sprayer at a higher N rate than urea without fear of burning the turf. Fall fertilization, both in the early fall to speed recovery of the turf from summer stress and in the late fall to promote color retention into the winter and early spring greenup, is extremely important on all turfgrass areas. Research conducted at Ohio State University has shown that late fall fertilization promotes root growth in an indirect way.

Turf fertilized in the late fall has a reduced need for early spring nitrogen fertilization. Nitrogen fertilization in the early spring can decrease root growth. Also, because there is generally a flush of growth during the spring due to increased moisture, the first fertilization should occur in late spring.

Recent research conducted at the University of Illinois evaluated late fall applications of IBDU, sulfur-coated urea and urea for their effect on spring color. With sulfur-coated urea and urea, a November application resulted in superior spring color compared to where these same fertilizers were applied in September. With IBDU, a September application resulted in turfgrass color equivalent to where the IBDU was applied in November. Better results for the year were found where IBDU was applied in June and September than in June and November.

Although the greatest plant response is caused by nitrogen fertilization, the other elements are certainly important in the overall health of the plant.

NITROGEN GUIDE FOR COOL-SEASON GOLF TURF

	Aug.	Sept.	Oct.	Nov.	Apr.	May	June	July
	---------- lbs nitrogen/1000 ft² ----------							
Greens								
Creeping bent		1.0	0-1.0	1.0	0-0.5	0.5-1.0	0.5-1.0	0-0.5
Fairways								
Creeping bent		1.0		1.0		0.5-1.0	0.5-1.0	
Kentucky blue		1.0		1.0		0.5-1.0	0.5-1.0	
Perennial rye		1.0		1.0		0.5-1.0	0.5-1.0	
Tees								
Creeping bent	0.5	1.0		1.0		0.5-1.0	0.5-1.0	0.5
Kentucky blue	0.5	1.0		1.0		0.5-1.0	0.5-1.0	0.5
Perennial rye	0.5	1.0		1.0		0.5-1.0	0.5-1.0	0.5

Use low end of ranges for courses with moderate play, high end for courses with heavy play. Use higher N on Penneagle greens. Use low end of range if fairway clippings are returned or to combat annual bluegrass. Maintain good fertility on perennial ryegrass fairways to help reduce the severity of red thread. Tee program should be adjusted based on number of rounds and size of tees.

The other elements

A basic recommendation regarding the use of nitrogen, phosphorus (P) and potassium (K) is to apply these elements in a 3:1:2 (N:P:K) ratio. This recommendation is based on the fact that turfgrass tissue contains N, P and K in approximately this same ratio.

However, consider the points listed below when planning the rest of your fertilization program.

1. Potassium fertilization. There is a trend to apply higher levels of potassium to turfgrasses. This means applying an amount of potassium equal to or greater than the amount of nitrogen applied. Research reported by Bob Shearman, Ph.D. and Jim Beard, Ph.D., in 1975 indicated that increased levels of potassium resulted in improved wear tolerance of Toronto creeping bentgrass.

Currently, Shearman is studying the effect of potassium fertilization on both creeping bentgrass and Kentucky bluegrass on both heavy and light textured soils. He recommends a 1:1 ratio between nitrogen and potassium. You may want to try higher levels of potassium on an area that gets a lot of wear to judge the results.

Remember that potassium chloride (muriate of potash) can burn the turf if applied under the right conditions. Potassium sulfate (sulfate of potash) has a lower burn potential than potassium chloride.

2. Phosphorus fertilization. The trend with phosphorus applications on golf turf has been to apply as little as possible. This practice resulted

continued on page 43

from the observation that annual bluegrass encroachment was greater where phosphorus levels were high. Also, the use of tricalcium arsenate to control annual bluegrass dictated that phosporus levels be low since phosphorus counteracted the toxicity of the tricalcium arsenate. Some recent observations have indicated that the turf's stress tolerance is reduced under low levels of phosphorus.

It would be wise to take periodic soil tests to monitor the phosphorus level especially where clippings are being collected. Don't entirely eliminate phosphorus from consideration in your fertility program.

3. Lime. Lime applications are necessary when growing Kentucky bluegrass on acid soils. Maintaining the proper pH in the soil will help ensure the maximum rate of thatch decomposition.

4. Sulfur. Just as lime applications can be used to raise soil pH, sulfur applications can be used to lower the soil pH. The reason for lowering the pH is to provide a better medium for plant growth. Some nutrients are not available to the plant at a high soil pH.

Ideally, sulfur should be incorporated into the seedbed before planting since it reacts slowly. It is important to be careful when using sulfur on established areas. Do not make large applications at any one time. Since the sulfur breaks down slowly and moves slowly, you can end up with an extremely low pH in the thatch layer. Consider applying sulfur after core cultivation.

Use soil tests to determine whether it is feasible to lower the soil pH with sulfur. Sometimes it is difficult to apply enough sulfur to lower the soil pH when the water used for irrigating the turf has a high pH or where free calcium carbonate is present in the soil.

Sulfur has been applied to creeping bentgrass putting greens to discourage the growth of annual bluegrass since the bentgrass can tolerate a low pH but annual bluegrass cannot. Flowable forms of sulfur are preferred to granular forms for applications to greens. Before starting a sulfur program on greens, consult with your state turfgrass extension specialist for information about using sulfur.

5. Iron fertilization. Iron applications may be necessary in parts of the country where soil pH is high and iron in the soil is not available to the plant. Iron can also be used to enhance the color of the turfgrass stand in areas of the country where iron deficiencies are not common. Iron sulfate applied at a rate of 1-2 oz. per 1000 sq.ft. will provide a response for several weeks. The actual length of the response will depend on the growth rate of the turf. Iron is not translocated in the plant. Once the treated tissue is mowed off, the response will fade.

6. Micronutrients. Applications of micronutrients (iron, manganese, zinc, copper, molybdenum, boron and chlorine) may sometimes be necessary on pure sand putting greens because of the low nutrient holding capacity of the sand, but they are rarely if ever needed on turfgrasses growing on pure soil or a mix containing soil.

With careful planning, a good fertility program can be developed for the golf course. It is important to realize that weather conditions can dictate departure from the basic plan. Do not be afraid to experiment with different programs.

Finally, seek help from a fellow superintendent if you are new in an area and unfamiliar with the weather patterns or the history of the golf course. Most superintendents are glad to help someone be successful. **LM**

NEW TURF-TYPE TALL FESCUES
Now, more than ever the choice of professionals.
Join the rapidly growing number who select Tall Fescue for:
• rich, dark green dense turf
• low maintenance
• soil and climate adaptability
• tolerance to shade and cold
• tolerance to heat and drought
• resistance to disease
• durability and longer wear
• year-round beauty and performance
Oregon Turf Type Tall Fescue has all the superior qualities you want and need: beauty and rugged stability. Demand the perfect choice for low maintenance turf, ideal for playing fields, parks, home lawns, airfields, roadways, industrial and commercial sites and more.
For more information contact your seed dealer, or write to:
OREGON TALL FESCUE COMMISSION
2140 Turner Rd. SE | Salem, Oregon 97302
Phone (503) 585-1157

Circle No. 136 on Reader Inquiry Card

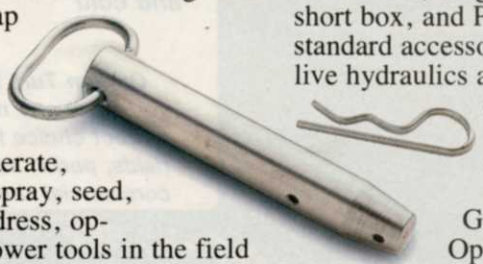
Built like a truck... works like a fleet.

The Cushman Turf-Truckster® is your key to cost-efficient turf care.

You get more mileage out of a Cushman Turf-Truckster because it's not only built to go the distance, it's designed to do more jobs, and do them better. Because no other turf vehicle gives you the rugged versatility of Cushman's exclusive pin-disconnect system.

The pin-disconnect system puts it all together.

The industry's largest selection of hard-working turf care attachments can be changed on the Truckster in just minutes. No bolting. No tools. Just snap in two or three pins, and you're ready to go.



You can aerate, haul, dump, spray, seed, fertilize, top dress, operate small power tools in the field — now you can even pick up cores. You'll save time, stretch your budget, and give your turf the finest care possible.

Bar set, drag mat, flatbed box, short box, and Power Converter are standard accessories. Add optional live hydraulics and you can add shortbox dumping, flatbed box dumping, the Quick Aerator, and the Greensaver Aerator. Optional PTO for the spreader/seeder, Vicon Spreader, Cushman Top Dresser, 100 or 150-Gallon sprayers, hand gun and

boom completes your single-vehicle work fleet — almost.

Introducing the new Cushman Core Harvester.™

The newest addition to the Cushman Turf-Truckster fleet saves time and cuts labor 75% on greens aeration. Because with live hydraulics and the new Cushman Core Harvester accessory, one person can do the work of four.

The Cushman Core Harvester glides gently over the green to scoop up cores left from walk-behind aerators. So, you can free up your grounds crew for other jobs, and get golfers back into play faster than ever before.

More years of heavy use.

With all the work your Truckster will do, it's got to be tough. And it is. The Truckster's rugged, carbon-steel channel frame and heavy-duty suspension are designed to withstand years of pounding under a 1,900-lb. maximum load. Cushman's work-proven, easy-maintenance 22-hp. gas engine has plenty of stamina to pull tough loads over the long run.

A lesser turf vehicle simply won't do if you're tackling tough turf maintenance jobs thousands of hours a year, year in and year out.

For more information or a free demonstration of what the Cushman Turf-Truckster can do for you, contact the Cushman dealer nearest you today. Or call toll-free: 1-800-228-4444.

CUSHMAN®

BUILT TO LAST

5314 Cushman, OMC-Lincoln, P.O. Box 82409, Lincoln, NE 68501

Circle No. 108 on Reader Inquiry Card

© Outboard Marine Corporation, 1987. All rights reserved.

ANATOMY OF AN I.P.M. PROGRAM

With concern over pesticide use, more cities are turning to Integrated Pest Management. IPM controls insects through spot treatments and cultural methods.

by Deborah Smith and Startan Gill

Montgomery Village cut costs by more than 55 percent over two years when they implemented an I.P.M. program.

Professional landscape managers need to be concerned with efficient pest control programs designed to keep the customer happy, provide maximum plant protection, and provide a healthy profit.

For years, cover sprays have been the traditional method of pest control. A blanket spray on all landscape plants is assumed to prevent possible pest problems. However, preventive sprays may actually produce some detrimental side effects in urban areas; such as increased pest resistance to pesticides, resurgence of target pests following treatment and outbreaks of secondary pests once the target pest has been killed.

An additional problem associated with pesticide use in urban settings is the environmental hazard resulting from drift to non-target treatment areas.

Incidents of pesticide misuse are sensationalized by the media. Insurance rates for pesticide applications have increased 200 to 300 percent from previous years. Insurance companies are hesitant to insure pesticide applicators because of the problems with liability insurance. Many homeowners are thus questioning the required frequency of pesticide applications around their homes.

In Maryland, for example, environmental groups and concerned citizens have successfully petitioned local government in two counties to enact legislation requiring the posting of signs for each lawn pesticide application. Likewise, Maryland barely voted down a bill requiring such restrictions

Deborah Smith is with the Prince William County Cooperative Extension Service, Manassas, Va. Stanton Gill is with the Montgomery County Extension Service, Gaithersburg, Md.

on commercial application of pesticides on residential lawns and landscapes.

If this trend continues, landscape managers will have to look at ways to modify spray tactics so that the public is convinced that pesticides are being used in the absolute safest manner and only when absolutely necessary.

Customers ironically want complete protection from pest damage but do not wish to have pesticides overused around their homes. Are there presently any viable substitutes to cover sprays?

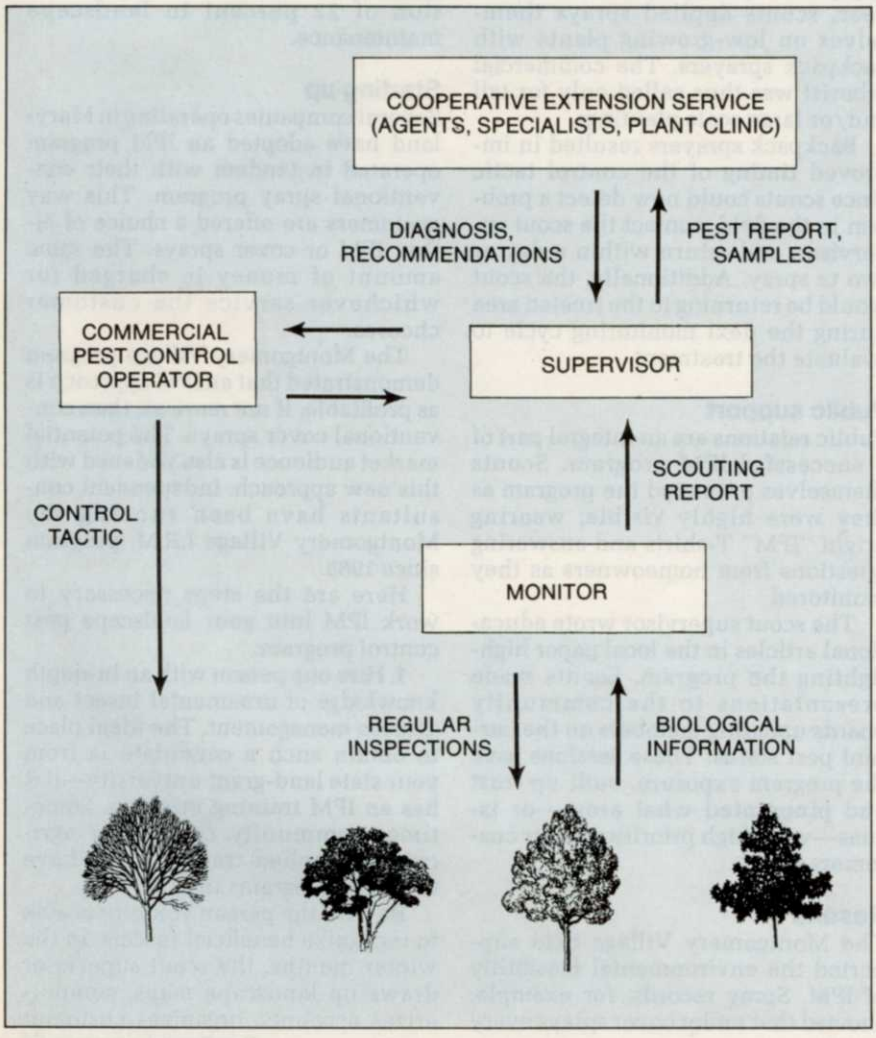
Research has tested a management concept called Integrated Pest Management in urban landscape settings. I.P.M. programs use a monitoring program in which landscapes are regularly inspected for cultural problems, insects and disease pests. Cover sprays are eliminated; instead, individual plants (hot spots) are spot treated with the least toxic pesticide available once the pest is noticed. Control material could be a biorational (such as *Bacillus thuringiensis*, milky spore or insecticidal soap), or a short residual, low toxicity pesticide, such as a synthetic pyrethroid.

Table 1

ENVIRONMENTAL AND ECONOMIC IPM IMPACT

	1982		1983		1984			
Community	number of plants sprayed	cost of spray $	number of plants sprayed	cost of spray $	number of plants sprayed	cost of spray $	2 Year Average Percent Spray Reduction	2 Year Average Percent Cost Reduction
A	738	2,985	78	784	142	822		
B	914	3,750	66	1,663	136	2,986		
C	195	1,325	107	510	128	401		
Total	1,897	7,970	251	2,957	406	4,209	83	55
Labor Cost* $	0		2505		4209			
Final Cost $	7,970		5,462		6,988			22

* includes salaries of 2 scouts in 1983 and 4 scouts in 1984



Sprays are eliminated or curtailed when natural predator and parasite insect activity is observed controlling the pest.

Urban I.P.M. programs have been tested in residential landscapes, city street trees and institutions. These programs have shown that I.P.M. methods control pests even better than do cover sprays, primarily since monitors (scouts) observe and control pest populations before they reach damaging levels.

Environmentally speaking, the amount of pesticide used is reduced when cover sprays are replaced by spot sprays, which in turn reduces the potential risk of human exposure.

Research has shown that I.P.M. programs not only control more pests, but also have lower pesticide costs than cover spray programs. However, labor costs are higher because of the time scouts spend monitoring landscapes. Considering this, is I.P.M. an economically feasible venture for a commercial company?

To answer this, the University of Maryland Cooperative Extension Service set up a demonstration I.P.M. program in 1982 in Montgomery Village, a planned community in suburban Maryland. People in the community wanted the program for two major reasons:

(1) they felt their present eight-year cover spray program was giving inadequate pest control for the money

they were spending; and

(2) they actively expressed concern over what they perceived as hazardous pesticides being applied unnecessarily.

Our solution was to set up a comprehensive pest management program in their community. Using previous Maryland I.P.M. programs as guidelines, our goal was to eliminate preventive sprays and thus limit treatments only to active, damaging pest infestations. The Montgomery Village program was started in 1983 on 354 acres. In 1984, the success of the program led to an addition of 122 acres, bringing the total land area to 476 acres. The program covered common ground plants, street trees, community centers and parks and recreation sites amidst single family homes and townhouses involving 3850 residents.

Extension agent Deborah Smith checks plant material for insect damage.

Program organization

The program was set up in such a way that all scouting activities were coordinated by a scout supervisor specifically hired to oversee the program. Each community was monitored at two- to three-week intervals.

Undergraduate plant science students from the University of Maryland were hired as scouts; however, experienced gardeners from the area were found to make excellent part-time scouts. Scouts were trained before the onset of the monitoring season (April to September) by cooperative extension agents.

The training topics focused on plant and pest identification, insect and disease problems and plant stress factors. After completion of a plant inventory in each community, a list of the most abundant plants was used as a basis for training. By knowing the most common plants, the pest complex could be predicted and emphasized during training. Supplemental training was supplied at monthly scout meetings by the scout supervisor.

For programs in townhouse communities, which typically had a wide variety of densely-planted plant material, rough landscape maps were sketched and monitoring notes were made directly on these maps by field scouts. For larger communities, these maps were too time-consuming to draw, so street maps provided by the builder were used to pinpoint large scale pest populations for spraying. Scouting notes were then written on printed forms detailing location, condition, and the number of plants affected by the observed problem.

Spray recommendations

The scout supervisor compiled all scouting information and coordinated control recommendations among communities. During the program's first year, all control recommendations were supplied to the community maintenance director, who contracted with a commercial arborist to apply the spot sprays. The second year, scouts applied sprays themselves on low-growing plants with backpack sprayers. The commercial arborist was thus called only for tall and/or large scale plantings.

Backpack sprayers resulted in improved timing of the control tactic since scouts could now detect a problem in the field, contact the scout supervisor, and return within a day or two to spray. Additionally, the scout would be returning to the treated area during the next monitoring cycle to evaluate the treatment.

Public support

Public relations are an integral part of a successful IPM program. Scouts themselves promoted the program as they were highly visible; wearing bright "IPM" T-shirts and answering questions from homeowners as they monitored.

The scout supervisor wrote educational articles in the local paper highlighting the program. Scouts made presentations to the community boards updating members on the current pest status. These sessions gave the program exposure, built up trust and pinpointed what areas—or issues—were high priorities to our customers.

Results

The Montgomery Village data supported the environmental feasibility of IPM. Spray records, for example, showed that under cover sprays every evergreen (totalling 567 trees) in the program area was sprayed twice a year for bagworms—regardless of whether they were infested or not.

IPM monitoring showed that only 19 trees had a high enough bagworm population in 1983 and 1984 to warrant a spray. All in all, only 657 plants were sprayed over the two-year IPM program—an 83 percent reduction in the number of plants sprayed as compared to one year of cover sprays.

The majority of these sprays were for mid-to-late season pests, such as orange-striped oakworm, which were never targeted by early season cover sprays.

In 1982, the year proceeding the program, $7970 was spent on three pesticide cover sprays plus two citizen request sprays. IPM spray costs averaged $3583 a year, yielding a 55 percent cost reduction over two years. This demonstration was quite labor intensive due to regular monitoring.

Scout salaries in three communities averaged $2426 per year. When salaries are included in program costs, the entire IPM program averaged $6009 per year—but even this represents an average annual cost reduction of 22 percent in landscape maintenance.

Starting up

Several companies operating in Maryland have adopted an IPM program operated in tandem with their conventional spray program. This way customers are offered a choice of either IPM or cover sprays. The same amount of money is charged for whichever service the customer chooses.

The Montgomery Village program demonstrated that an IPM approach is as profitable, if not more so, than conventional cover sprays. The potential market audience is also widened with this new approach. Independent consultants have been running the Montgomery Village I.P.M. program since 1985.

Here are the steps necessary to work IPM into your landscape pest control program:

1. Hire one person with an in-depth knowledge of ornamental insect and disease management. The ideal place to obtain such a candidate is from your state land-grant university—if it has an IPM training program. Sometimes community colleges or agriculture/applied trade schools have two-year programs in IPM.

Be sure the person you hire is able to recognize beneficial insects. In the winter months, the scout supervisor draws up landscape maps, computerizes accounts, organizes customer

Continued on page 50

Photograph Courtesy NASA

Imagine what it might look like with Nutri-Kote® Plus Apron® coated seed.

Nutri-Kote® Plus Apron® coated seeds are delivering dramatic results for turf professionals nearly everywhere.

Even when the soil, weather and traffic conditions are less than perfect, every Nutri-Kote Plus Apron coated seed has a much better chance of reaching maturity compared to uncoated seed.

The unique combination of nutrients, micro-nutrients and the systemic fungicide Apron controls pythium and other seedling diseases. Turf establishment is much faster than uncoated seeds. Root development is greatly enhanced. There's more lush green growth. And seeds stay where you plant them.

Discover for yourself what turf professionals at golf courses, stadiums, parks, and municipalities across the country are finding out. That Nutri-Kote Plus Apron coated seed produces healthier, better-looking turf. And we're not just promising you the moon.

But maybe someday. . .

NUTRI-KOTE is a registered trademark of CelPril Industries, Inc. APRON is a registered trademark of CIBA-GEIGY.

NUTRI-KOTE® PLUS APRON®

You'll always look like a pro.

Seed Coatings by CelPril Industries, Inc.
251 Oak Street, Manteca, CA 95336, 209-823-1738

Circle No. 105 on Reader Inquiry Card

6-2725

records and drums up business. Prior to the onset of the growing season, he or she trains a few regular employees in landscape plant identification, pest identification and control, and plant environmental (stress) problems.

This initial training covers the most prevalent pests ("key pests") and past problems recorded in customer accounts, as determined by spray records. When a list of the most abundant plants scouted in the property is used as a basis for training, the pest complex of these can be predicted and emphasized during training.

One precaution: companies that have tried to use an employee who has been using cover spray methods for years as a program manager have met with failure. It is difficult to change attitudes of people ingrained with cover spray concepts.

It is preferable to hire someone who has been trained in the methodology of IPM if the program is to work for your company. The manager must be familiar with beneficial insects, cultural and mechanical controls, biorational pesticides, and pesticides.

2. Define the type of customer you wish to work with. Will you take on residential home landscapes, community common ground landscapes, or commercial building landscapes? Each of these different landscape situations requires different time commitments for a monitoring program.

The average ½-acre residential landscape takes 30 to 40 minutes for a thorough inspection in the spring, and 15 to 20 minutes by midsummer when fewer pests are active.

3. Decide on how many customers you can handle. One good scout supervisor should be able to handle 40-50 half-acre residential homes per season. Once the program is established, future expansion can be planned based on how many field personnel the scout supervisor can train to perform the monitoring.

4. Contact your local extension service for help. Extension agents in urban agriculture are experts in plant diagnosis.

5. Decide on a price for your service. Most companies presently using IPM are charging the same amount charged for cover sprays. We suggest determining how often during the season the location will be monitored, how much time is required for personnel to be on location, then add your profit margin.

Disregarding periodic insect outbreaks, your contracts should become easier to maintain over the years once pest populations are pinpointed and managed under regular monitoring.

6. Advertise your IPM program and let customers know of its advantages. An article in a local paper is a great way to get your message out to the public. Don't forget your regular customers; let them know they have a choice of programs. It is most likely that new customers are the ones who will be most interested in this approach of pest control.

7. Print up a brochure advertising your IPM approach with a simple explanation of what the program entails. Be sure to emphasize the objectives of the program; including reduced pest damage, use of natural controls and resistant plant material, selectivity and timing of pesticides, and a reduction in the number of plants being sprayed.

8. Become familiar with IPM research. Get copies of past research programs, and talk to those involved. True IPM programs are very similiar in methodology, yet actual organization may differ. **LM**

TURF VAC® sweeps both turf and pavement

The only sweepers with unique all-vacuum design that operate on both turf or pavement, wet or dry. Safe, powerful air picks up bottles, cans, as well as fine clippings to reduce thatch build-up.

- Sweeping widths from 4′ to 30′.
- 6″ × 10′ hand intake hose available.
- Hard surface filtration.
- No fingers or brushes to wear out—picks up by air only.
- Ground dump & power lift dump.
- Tow type or self-propelled.
- PTO models available.

Write for brochures/distributor in your area.

TURF VAC CORPORATION
15701 Graham Street,
Huntington Beach, CA 92649
Telephone: (714) 898-9382

MODEL RMB. Rear Mounted Blower. Fits any Category 1 or 2 3-Pt. hitch tractor. Easy on-the-go left/right/rear discharge control. Handles almost all turf or pavement clean-up jobs.

MODEL FMB
Front-mounted blower. Easy manual control of left/right/front on-the-go discharge.

COREMASTER CM-4
Designed to lift sand cores off golf greens and tees without disturbing grass. Sweeps 48" wide.

MODEL FM5-LD
5 cubic yard hopper lifts to dump at 96". Smooth vacuum action sweeps 60" wide.

Circle No. 150 on Reader Inquiry Card

How to turn summer stress into spring success.

You see it every year, without fail. Summer stress takes its toll on turf, resulting in lawns that lack density, color and resistance to damage.

But you can turn summer stress into spring success with an effective fall fertilization program that includes Lebanon Professional Turf Products.

Lebanon's fall fertilization products like Lebanon Pro 33-2-5 and Lebanon Custom 32-3-3 are specially formulated to give better fall color, enhance root growth, increase winter hardiness and provide quick green-up next spring.

Lebanon's quality SCU blends help keep your customers' lawns at the peak of perfection all year round. Plus they are priced to help you maintain a competitive edge and keep your business growing.

For more information on Lebanon Professional Turf Products for fall fertilization, call our Greenline today at 1-800-233-0628, 1-800-852-5296 (PA only), or 1-717-273-1687.

Lebanon
TOTAL TURF CARE

A division of Lebanon Chemical Corporation
P.O. Box 180 • Lebanon, PA 17042

Circle No. 121 on Reader Inquiry Card

© 1987 O.M. Scott & Sons Co.

The Average Person's Family Snapshot.

We admit, at times a Scotts Tech Rep does put his work before his family.

But then, the care and nurture of your turf is a very big responsibility. Your problems are his problems.

And, when a Tech Rep isn't spending time with you, he's spending time with our research and development people.

Providing them with the feedback that makes our new products so revolu-

*In Ohio call collect 513-644-2900.

A Scotts Tech Rep's Family Snapshot.

tionary, and keeps our existing products so dependable.

So it really is unfortunate that a Scotts Tech Rep doesn't take better family snapshots. He needs something to remember what his family looks like.

For more information, just contact your Scotts Tech Rep or call us at 1-800-543-0006.*

Scotts® ProTurf®

Circle No. 143 on Reader Inquiry Card

On Design

THE PATH TO PAVING

by Heide Aungst, managing editor

Visitors to the Mercado Festival Center's stores and restaurants may feel like they're in a Mediterranean Village. Landscape architects Wallis Baker & Verlander of Winter Park, Fla. worked with architect McRee, Inc. of Orlando, Fla. to create that Mediterranean flavor with more than 73,000 square feet of courtyards, walkways, plaza and the entrance drive.

"We tried to get as much color as possible with the introduction of material the tourists would like to see" says landscape architect, Tom Wallis. Wallis developed that tropical look with lady fan palms, European fan palms and Drake elms. As a ground cover he chose large mondograss. Red ruffle azeleas and wax-leave begonias add color to the green area.

The paving systems add more than color to the area. "They create interest with texture and shape," Wallis says. Plant materials and irrigation for the project cost about $300,000. It won a 1986 honor award from the National Concrete Masonry Association.

Uni-Group Paving, Circle No.191 on Reader Inquiry Card

The Village of Garden City, N.Y. had a problem. It's main street of business, Seventh Street, was a conglomeration of concrete and irregularly placed plant material. Some described Seventh Avenue as "uninviting" (before photo above inset). Enter: landscape architect William Kuhl of New York, N.Y. Kuhl created a new visual identity and sense of design continuity to the region.

His primary source in doing this was the use of Grinnell Concrete Pavingstones. The pavers establish a rhythm for pedestrians, in both pattern and color (above; below). The interlocking pavers require low maintenance and have a non-slip surface.

In order to offer a vertical element to the design, Kuhl chose three types of trees to line Seventh Street: Armstrong red maples, little leaf lindens and zelkovas.

The maples have an upward growth habit which makes them ideal for a busy street. A broad spreading tree would interfere with vehicles' sight lines. The architect put the lindens in front of stores which have aesthetically poor facades because of the trees' dense canopies. The zelkovas will frame the end of the street which has residential and multi-story buildings (below). Flowering trees, including stewartia and laburnum, will provide color and fragrance in early spring. The landscape contractor for the project was Hecksher Nurseries of Bohemia, N.Y.

The Seventh Street Project began in August 1986 and was completed in December 1986. Cost for the project was $800,000.

Grinnell Concrete Pavingstones, Circle Number 190 on Reader Inquiry Card.

PART II OF II

MANAGEMENT EVALUATION

Last month we offered some ideas on personnel evaluation. This month we deal with management evaluation and assessment.

by Rudd McGary and Ed Wandtke

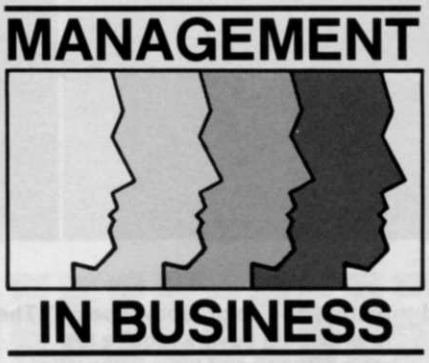
The big difference between personnel and management evaluation lies in the ability of managers to have an effect on companies through more than just their own personal actions. Managers manage either assets or personnel through which they attempt to reach the company's objectives.

Since more people than just the manager are involved, evaluation methods and criteria are different than those we presented for personnel in our last column.

Evaluating control

The key to making a management evaluation work, at least in part, is to be sure that the evaluation focuses on those things under the manager's control. For instance, managers being evaluated on sales growth should have some ability to control that growth. If bottom line profitability is being measured, the manager should be able to affect that bottom line.

Wandtke and McGary are senior consultants with All-Green Management Associates in Columbus, Ohio. Dr. McGary focuses on marketing and managenent issues. Wandtke focuses on operations and financial questions.



A second important factor in assessing managers is that some plan must be in place against which to measure the managers. We have written several columns dealing with the planning function as one of the most important parts of a manager's job. In preparing an assessment, the plan is the instrument that gives a basis for evaluation. Without the plan, the assessment will be a totally subjective one, which can lead to misunderstandings between the managers and their superiors.

So, we need a plan on which are three assessment levels. On the first level, the manager fails to make satisfactory progress towards fulfilling the plan. In that case, some sort of corrective action needs to be taken. On the second level, the manager makes the "average" plan, the one which is acceptable but not exceptional. On the third level, the manager goes above plan, showing exceptional effort and management talent. By keeping in mind these three levels, you have the beginning of a management evaluation program.

Now, on to possible areas that can be evaluated for management performance.

Financial

Managers can be assessed in several ways financially. First, you may look at their contribution to profitability based on their section's performance. Second, you can look at their control of costs. The key to both of these is to be working against a written forecast for the appropriate time period and to make sure that the managers have control over the things you are measuring.

An example of a poor assessment is looking at bottom line profitability as a measurement of a small company's management effectiveness. While doing so, you, the owner, decide that at the year's end you will give yourself a large bonus. Clearly the manager should be evaluated before you take any extraordinary actions. The manager who can't control the bottom line in this case shouldn't be measured on it.

Marketing objectives

If you are a sophisticated company, with a great deal of market information, you can begin a marketing evaluation with growth in market share.

If you don't have a clear picture of the overall market's worth (and most small companies find it too time-consuming to arrive at a true figure in this area), you can look more closely at sales figures. In sales you can look at:

- closing ratios for the salespeople;
- overall growth in revenue;
- the number of "cold" calls;
- the ability of the manager to meet overall sales plan objectives;
- sales force retention; and
- the profitability of the sales force based on all the costs allocated to that force.

All of these areas are ones which can be under the control of a manager, and as such are ones which offer good information when you evaluate them.

Asset use and control

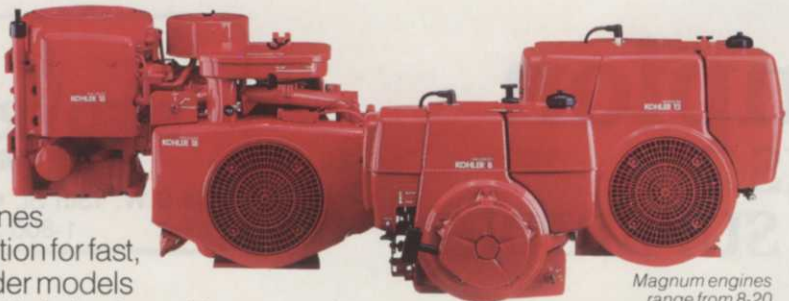
In looking at the manager from the standpoint of asset utilization and control, you should be aware of the best way to leverage the company's assets, and that awareness should

continued on page 61

FOR THIS YOU NEED A MOWER WITH MORE THAN JUST YOUR AVERAGE GARDEN VARIETY ENGINE.

For a job like this you need an engine you can depend on. You need a Kohler Magnum engine.

All Magnum engines feature electronic ignition for fast, sure starts. Twin cylinder models include full pressure oil lubrication, with automotive-type oil filters. Additional features include dual element air cleaning, PosiLock™ connecting rod cap, optional Oil Sentry™ low oil sensing and a two year warranty that covers commercial use.



Magnum engines range from 8-20 H.P. in horizontal and vertical shaft designs.

We designed Magnum engines to require fewer service parts and less routine maintenance, so your equipment will spend less time in the shop and more time on the turf.

To find out how you can benefit by having Magnum engines on your equipment contact: Kohler Engine Division, Kohler Co., Kohler, WI 53044, 414-457-4441.

KOHLER engines

Built for a hard day's work.

Circle No. 120 on Reader Inquiry Card

THE PLANNED COMMUNITY

It took 25 years, but the original plans for the town of Columbia, Maryland, have finally been realized. Landscaping plays an important role.

by James E. Guyette

In 1962, the Rouse Company of Columbia, Md., began buying rural property in Howard County. The firm's plans to build a pre-designed community were to be realized, as today Columbia is a bustling city containing about 60,000 people and approximately 1,500 businesses.

Columbia is about 20 miles from Baltimore and 25 miles from the District of Columbia.

Residents of Columbia live in a series of "villages" that encircle a downtown area that is billed as the focal point of the Washington-Baltimore corridor.

Each village contains a community building, grocery store and other retail outlets designed to meet the needs of each citizen. A jumbo shopping mall, a number of commercial operations and a light industrial park make the city basically self-sufficient.

When in the planning stages, the Howard Research and Development Corp. (a subsidiary of Rouse) hired a number of experts to devise the perfect community. They made such suggestions as having neighborhood schools and activity centers and preserving the natural contour and beauty of the then-fallow land.

There are nine villages. A 10th is in the planning stages. Each village has three neighborhoods with 600 to 800 dwelling units. A series of pathways cross open space and lead to schools, "totlots" (playgrounds) and other amenities. Also, Columbia is graced by a number of man-made lakes.

Of the 14,000 acres in Columbia, 1,500 of them are classified as open space. In the future, that figure will jump to 3,000 acres.

Upkeep of individual yards is the responsibility of the landowner. The open space falls under the supervision of Charles H. Rhodehamel, ecologist and land manager at the Columbia Park and Recreation Association, Inc.

About $500,000 is spent each year on turf-related activities, including mowing, trimming and seeding.

A big factor in Rhodehamel's line of work is that the open space is used for multiple purposes, from baseball to dog-walking to jogging to outdoor concerts to Frisbee-tossing.

"You can't say, 'Get the hell off my turf—you're killing my grass,' " Rhodehamel jokes. "It's not something that we can close down in certain sections."

The extensive use of turf areas means that the maintenance crew is not seen out in the field after residents start arriving home from work.

The open space abuts most of the yards and public areas, such as the maze of paths, 130 totlots and about 200 wooden foot bridges.

"Spraying is minimized because we touch on so many private properties," Rhodehamel says. Liming and fertilization are used, but Rhodehamel points out that his grass does not have to look perfect: "Our goal is not professional baseball infield turf."

Verticutting and aeration are done when needed. He says pests and fungi are not big problems.

Rhodehamel has four working foremen. There are 30 men on the lawn maintenance crew and 15 on the land development crew. They cover a number of different areas: carpentry, grading, seeding and asphalt. **LM**

James E. Guyette is associate editor of "Lawn Care Industry" magazine, another HBJ publication.

Charles Rhodehamel, ecologist for The Columbia Association, closely checks the turf at one of the community's open spaces.

Leading Professionals Choose Champion . . . .

. . . There's a reason.

Our blend of top-rated perennial ryegrasses has been used nationwide by demanding professionals.

Now, the demand is even greater with the addition of SR 4000 and SR 4100 Perennial ryegrasses. These exciting new cultivars contain high levels of endophyte for superior turf quality and insect resistance.

Champion IS CLEARLY SUPERIOR

SEED RESEARCH
OF OREGON, INC.
644 S.W. 13th St. • Corvallis, OR 97333
1-800 253-5766

Lea's Green Meadows, Inc.
41 P Street, SE
Washington, DC 20003
(202) 488-1818

Old Fox Chemical
94 Dexter Road
E. Providence, RI 02914
(401) 438-5000

Sweeney Seed Co.
Chestnut & Biddle Avenues
Ardmore, PA 19003
(215) 896-7311

The Terre Co.
P.O. Box 1014
Clifton, NJ 07014
(201) 473-3393

Wilson Feed & Seed
2105 Hull Street
Richmond, VA 23224
(804) 232-6791

Circle No. 144 on Reader Inquiry Card

MANAGEMENT *from page 56*

translate into your planning.

For instance, if you have three vehicles, you should have a plan which shows how much revenue you expect to achieve through use of these vehicles. That becomes the standard against which the manager is evaluated.

Some young companies fall into the trap of looking at assets on a time basis rather than a revenue basis. They look at how often something is used rather than how much revenue is generated. All the vehicles in the above example may be used 12 hours a day, but that doesn't matter much if you don't receive enough revenue from that operating time.

Make sure you know how much each of your assets can contribute to the company and then evaluate them on a revenue basis or cost control basis, rather than on simply a time usage basis.

You should also look at downtime of assets. The more breakdowns you have, the less revenue you will generate. This is a key part of asset management, preventive maintenance, and is one that should be evaluated from the standpoint of management effectiveness.

Asset custody and safety should also be evaluated. Assets should be accounted for and controlled to avoid misuse of vehicles or inventory in the company's operations.

If you have three vehicles, you should have a plan which shows how much revenue you expect to achieve through use of these vehicles.

Operations efficiency

Operations efficiency is closely linked to asset management but has the personnel variable in it. You can evaluate how well crews are routed or how well equipment is used.

Time spent in transit is not usually billable as revenue. By tightening up the routes, the manager can greatly improve efficiency, and in turn use the assets better.

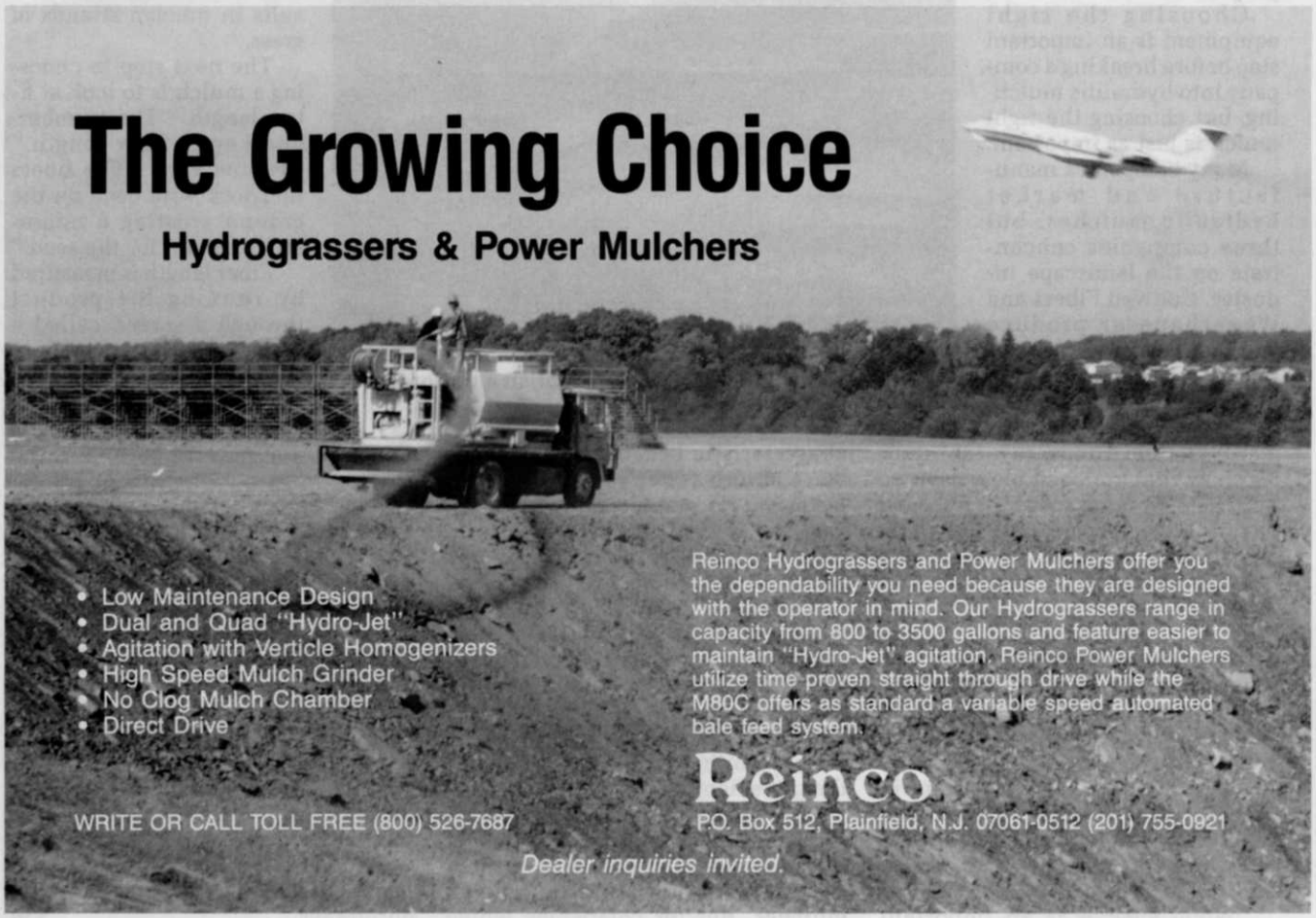
You should also make sure that, in their evaluations, the rate of call-back and service calls goes down because of management attention.

Summary

Assessing managers is a different process than assessing personnel. The planning that is part of managers' positions gives a guideline to effective evaluation.

You must keep the fact that the manager is controlling more than just himself or herself in clear perspective. Their job is to work with others in order to achieve company objectives. The need to allow the managers control over the variables on which they are being evaluated is extremely important.

We have seen companies assign jobs to managers without giving them the necessary authority to finish the jobs. If you combine a good planning system, evaluate against the planning done, and give the managers the authority to do their jobs, you should have a successful system in place that will help you evaluate the true effectiveness of your managers. **LM**


The Growing Choice
Hydrograssers & Power Mulchers
• Low Maintenance Design
• Dual and Quad "Hydro-Jet" Agitation with Verticle Homogenizers
• High Speed Mulch Grinder
• No Clog Mulch Chamber
• Direct Drive
Reinco Hydrograssers and Power Mulchers offer you the dependability you need because they are designed with the operator in mind. Our Hydrograssers range in capacity from 800 to 3500 gallons and feature easier to maintain "Hydro-Jet" agitation. Reinco Power Mulchers utilize time proven straight through drive while the M80C offers as standard a variable speed automated bale feed system.
Reinco
P.O. Box 512, Plainfield, N.J. 07061-0512 (201) 755-0921
WRITE OR CALL TOLL FREE (800) 526-7687
Dealer inquiries invited.
Circle No. 139 on Reader Inquiry Card

HYDRAULIC MULCHES: PAPER VS. WOOD

Hydraulic mulching is a growing practice among landscapers, but it has yet to reach its full potential.

by Heide Aungst, managing editor

What used to be somewhat of a novelty in the landscape business has become a common occurance. In fact, William Jacobsen, president of Conwed Fibers Inc., goes so far as to describe hydraulic mulching as "a renaissance."

It used to be that hydraulic mulching was limited to land reclamation and vast highway projects. But the introduction of smaller hydraulic equipment has brought the technique to golf courses, residences and commercial properties.

Choosing the right equipment is an important step before breaking a company into hydraulic mulching, but choosing the right mulch is just as important.

Many companies manufacture and market hydraulic mulches, but three companies concentrate on the landscape industry. Conwed Fibers and Weyerhaueser produce wood mulches, while Cellin manufacturers a paper mulch product.

Hydraulic mulching helps establish a uniform stand of turf.

Weyerhauser's sales manager, Bill Grunow says that studies show that mulched plots have up to 80 percent more cover than seeded plots. Mulches protect seed against elements such as wind and rain, and insulate the seed by retaining soil moisture.

Buying considerations

When choosing a mulch, one of the first things to look for is the product's content. Weyerhaueser's Silva-Fiber mulch is made out of 100 percent virgin wood. Grunow says the plant in Tacoma, Wash. manufacturers mulch made from whole small Alder trees. The Minnesota plant produces mulch from Aspen wood.

"Wood species is an important characteristic because some woods don't absorb water as readily," says Jacobsen. He wouldn't, however, reveal the type of wood used in Conwed's mulch, although it is 100 percent virgin wood.

Cellin's K hydraulic mulch is a wood cellulous product made from recycled newspapers collected at paper drives or obtained through a broker. "We add three ingredients to make it a good product," says Cellin's Harold Smith. Smith would not name the ingredients.

The biggest question concerning ingredients is whether wood or paper is right for the job. Some highway jobs specify the use of virgin wood fiber mulches. But for companies which have a choice, both products have advantages and disadvantages.

The biggest advantage of paper mulch is that it is less expensive than wood. "We don't think there's any advantage to raw wood," says Cellin's Al Turner. "The bottom line is that it (paper mulch) grows grass and is less expensive. We're not cutting trees down. What we're doing makes sense."

"On the ground, the paper can form a mache which hardens and tends to curl and ball up," Grunow says. "You tend not to get as even a coverage which results in uneven strands of grass."

The next step in choosing a mulch is to look at fiber length. "The number-one key is fiber length," Grunow says. "The fibers interlock with each on the ground creating a micro-environment for the seed."

Fiber length is measured by running the product through a screen called a Clark Fiber Classifier. Only certain length fibers will be retained on the screen.

Weyerhaueser specifies that a minimum of 30 percent of the fibers average .15 inches or longer with 50 percent or more retained on the screen. Conwed and Cellin both label their mulches "long fiber," but don't give a specific lengths.

The third point is whether or not the product contains a tackifier. Use of a hydraulic mulch with a tackifier depends on the size and slope of the area. All three companies manufacture products containing tackifier.

The products differ in slight ways, such as packaging, pricing (depending on regions of the country) and customer service.

"I don't think hydraulic mulching has yet to reach its full potential," Jacobsen says. **LM**

BOOKSTORE

010 - ADVANCES IN TURFGRASS PATHOLOGY
by Joyner and Larsen
Leading U.S. turf pathologists report on turfgrass diseases, pythium blight, snow molds, fairy rings, leaf spot of Kentucky bluegrass in Minnesota, initial and field fungicide screening, turfgrass disease resistance, etc. Contains new ideas on how to combat turfgrass problems. **$27.95**

220 - CONTROLLING TURFGRASS PESTS
by Shurtleff, Fermanian, Randell
New comprehensive guide provides the most up-to-date information available on the identification, biology, control and management of every type of turfgrass pest. Covers weeds, insects, animal pests and diseases in detail. Also provides information on cultural management practices: the establishment, care and renovation of low-, medium-, and high-maintenance turf areas. 50 color and 400 black and white photographs. **$27.95**

654 - MANAGEMENT OF TURFGRASS DISEASES
by J.M. Vargas
Identifies turfgrass diseases by description and illustration. Includes a holistic approach to healthy turf and lawns. Presents practical management strategies for golf courses, lawns and athletic fields. 204 pages, illustrated. **$26.70**

615 - TURF MANAGEMENT FOR GOLF COURSES
by James Beard
Written by an eminent turfgrass researcher, this USGA sponsored text is an ideal reference and "how to" guide. Details all phases of golf course design and construction, turf management, course administration, irrigation, equipment and disease and pest control. Fully illustrated. **$52.75**

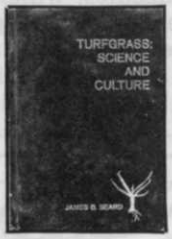
620 - TURF MANAGEMENT HANDBOOK
by Howard Sprague
Practical guide to turf care under both healthy and poor turf conditions. Chapters cover turf in cooler and warmer regions, fertilizer use, regular turf care, weed and disease control and special turf problems. Useful seasonal schedules for management of turf areas.
$19.00

110 - TURF MANAGERS' HANDBOOK Second Edition
by Daniel and Freeborg
ENTIRELY UPDATED. A practical guide for the turf practitioner. Chapters on grasses, growth regulators and diseases have had extensive modification. Innovations resulting from research and practice have been added to reflect the current techniques available for turf managers. Offers recommendations for effective turf protection through integrated pest management. Included are alternate plans for providing and improving safe, uniform turfgrass for sports fields. Outline format plus newly added index make this new edition easier to use and a more comprehensive approach to turfgrass science. **$32.95**

225 - TURFGRASS MANAGEMENT
by A.J. Turgeon
Revised edition. Covers the latest developments in turfgrass science and technology. Heavily illustrated with dozens of new drawings. Provides specific recommendations for applying the newest pesticides, fertilizers and other materials to combat turfgrass problems. A valuable reference for diagnosing problems and determining their causes. **$32.95**

630 - TURFGRASS: SCIENCE AND CULTURE
by James Beard
Comprehensive basic text and reference source used in many leading university turf programs. Includes findings of current research compiled from more than 12,000 sources. **$34.95**

640 - TURF IRRIGATION MANUAL
by James Watkins
A guidebook for engineers, architects, designers and contractors. Keeps pace with the latest developments in turf and landscape irrigation. Specific chapters devoted to rotary sprinkler design systems. Golf course design systems and expanded engineering and reference material. **$23.95**

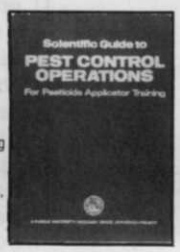


800 - THE GOLF COURSE
by Cornish and Whitten
The first book ever to give the art of golf course design its due, and golf course architects the credit and recognition they deserve. 320 pages and 150 color and black and white photographs. Traces the history and evolution of the golf course, analyzes the great courses, shows how they were designed and constructed. **$35.00**

HORTUS
THIRD
A Concise Dictionary of Plants Cultivated in the United States and Canada
Staff of the L.H. Bailey Hortorium, Cornell University

510 - HORTUS THIRD
from Cornell University
A 1,300 page concise dictionary of plants cultivated in the United States and Canada. A reference which every horticulture professional should have. **$125.00**

635 - IRRIGATION PRINCIPLES AND PRACTICES
by Hansen, Israelsen, Stringham
A new fourth edition of this highly successful textbook presents essential concepts pertaining to water conveyance, application, storage in the soil and use by plants. Basic underlying principles that govern irrigation practices are stressed. **$57.00**



125 - SCIENTIFIC GUIDE TO PEST CONTROL OPERATIONS
by Truman, Bennett, Butts
Provides a sound basis for studying the technical aspects of pest control. Covers pesticides, safety, health and environmental concerns, equipment, flies and mosquitos, rats and mice, birds and much more. **$35.00**

Mail this coupon to: Book Sales
Harcourt Brace Jovanovich Publications
One East First Street, Duluth, MN 55802

Name _____
Street Address _____
P.O. Box Number _____
City/State/Zip _____
Phone Number ( ) _____
Purchase Order Number _____
Signature _____ Date _____

Please send me the following books. I have enclosed payment* for the total amount.

Please charge to my Visa, MasterCard or American Express (circle one)
Account Number _____ Expiration Date _____

BOOK NUMBER AND TITLE	QUANTITY	PRICE	TOTAL PRICE

*Please add $3.00 per order plus $1.00 per additional copy for postage and handling. _____ (postage & handling)

Please allow 6-8 weeks for delivery.
Prices subject to change.
Quantity rates available on request.

Total Enclosed _____

LM

Hemlock—a versatile conifer

by Douglas Chapman, Dow Gardens

Hemlock is one of the most versatile native narrow-leaf evergreens for the landscapers' palette.

Hemlock is unique among the conifers in that it will grow in shade or in partial sun. It must be grown on cool, moist sites. It can be found growing in glacial rocky soil, fertile clay loam, or moist sandy soils. The optimal pH is from 4.0 to 6.5. This plant grows best on moist, yet, well-drained soils.

Hemlock is one of the most cold-tolerant plants, reported hardy to -76 degrees F. Hemlock should be transplanted balled and burlaped spring or fall.

Canadian hemlock is very shallow-rooted, thus intolerant to changes, frequently dying if plants around it are removed or the grade is changed. If undisturbed, it is a long-lived tree. Canadian hemlock, a fine-textured conifer, is most widely available in the trade. The needles, which last three to four years, are dark green with a silver-green on the under surface. The leaves are very sensitive to salt spray, resulting in defoliation and, in severe cases, death. It has a pyramidal habit of growth, being 40 to 70 feet in height and 25 to 35 feet in width.

The branches are pendulous and very resistant to ice and/or snow damage. Hemlock can be used as a hedge or in natural plantings.

Canadian hemlock is not suited as a foundation plant. It is well suited for large area landscapes, golf courses, parks, or the home landscape. It is most effective in groups of three or more and not as a specimen.

Only a few clones are available in the trade, but one report notes a great deal of variation in Canadian hemlock which should lead to many new cultivar introductions.

The two cultivars available are Coles Prostrate and Sargentii.

Coles Prostrate hemlock is more correctly a ground cover, being six inches in height and three to six feet in width. It should be used when a landscape architect is looking for a shade-tolerant evergreen ground cover.

Weeping hemlock (Sargentii) is extremely useful in the home landscape as a specimen in protected locations. It will reach six to eight feet in height and 12 to 25 feet in width. The largest I have seen is on Long Island at Planting Fields Arboretum.

Carolina hemlock is native to the southeastern United States, Virginia to Georgia. It is not readily available in the trade, but I have seen it being grown at Weston Nurseries in Hopkinton, Mass. It is more dense, due to the fact that it holds needles one year longer. The habit is very graceful. Carolina hemlock reaches 40 to 60 feet in height and 20 feet in width.

Carolina hemlock is more difficult to transplant than Canadian hemlock, but one report suggests it grows more rapidly once established. We have it growing in Dow Gardens in central Michigan.

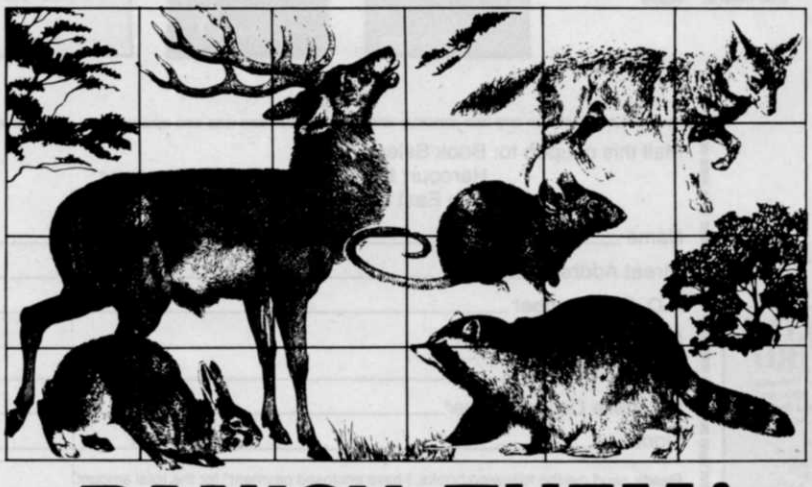
It is reported to grow better in urban landscapes than Canadian hemlock. It can be planted in the same landscape situations as mentioned above, and is especially well suited as a hedge plant. We are anxious to see it fruit; the cones are larger than Canadian hemlock, thus more effective.

Japanese hemlock is a small, compact tree, reaching only 20 to 25 feet in height. The short needles radiate out in all directions. They are light green underneath.

This is a tree that is difficult to find in the nursery trade, but it could be a unique addition to small home or courtyard landscapes. The largest plant I have seen growing is in Cambridge, Mass. at Mt. Auburn Cemetery. Japanese hemlock has the most dense appearance, holding onto the needles for eight to 10 years.

Hemlock is a genera that deserves a prominent place in the landscape. It has few disease problems unless weakened or predisposed. The most significant pest is mites which are not much of a problem if planted on a wet, cool site. It tolerates pruning well, thus is a good hedge.

Hemlock should be grown in groups for natural plantings and not as a specimen except for weeping Canadian hemlock. It grows well in the shade or on protected sites. Hemlock ranks high as a low maintenance, high quality landscape tree. Charles Sprague Sargent and Donald Wyman both rank Canadian and Carolina hemlock as the best of the narrow-leaf evergreens. **LM**



BANISH THEM!

STOPS ANIMAL DAMAGE FOR AN ENTIRE SEASON!
SAFE FOR PETS AND DOMESTIC ANIMALS.
HAS NO OFFENSIVE ODOR.

RO-PEL

ANIMAL, RODENT & BIRD REPELLENT

For additional information contact:

BURLINGTON BIO-MEDICAL & SCIENTIFIC CORP.

91 CAROLYN BLVD., FARMINGDALE, N.Y. 11735-1527 • PHONE: 516-694-9000 • TELEX: 6852289

Circle No. 103 on Reader Inquiry Card

Apache

Turf-type tall fescue

is the basis for the best turf blends and mixes.

Apache tall fescue consistently ranks in the top of turf trials all over our country. With its finer leaves and lush green color, it's a preferred cultivar by itself . . . or as the BASIS of a terrific sod blend with other tall fescues like Olympic and Bonanza. Many sod producers mix up to 10% bluegrasses like Columbia.

Any way it's blended, mixed . . . or seeded as a monostand, Apache is a performer in sod production, home lawns, parks and athletic fields where shade and maintenance budgets are rugged competition.

Order your Apache from a Turf-Seed distributor today!

Turf-Seed variety Oregon Blue Tags

qualify for cash for turf research to qualified associations and valuable prizes to individuals. Ask your distributor for details.

Apache as a basis for a tall fescue sod blend at 4½ months; Pacific Sod, Camarillo, California

TURF-SEED

Turf-Seed, Inc.®

P.O. Box 250, Hubbard, OR 97032
503/**981-9571** TWX **510-590-0957**

Circle No. 149 on Reader Inquiry Card

PROBLEM MANAGEMENT

by **Balakrishna Rao,** Ph.D.

Controlling angleworms

Problem: *How do you get rid of angleworms (earthworms) in bentgrass? When lead arsenate was legal it worked fairly well and one other chemical I tried didn't work at all. I hope you have a solution for killing angleworm without killing the bentgrass. (Wisconsin)*

Solution: Angleworms (earthworms) are considered to be beneficial and generally no control is needed or recommended. If the population is very high, their castings, seen as mounds of soil on turf, may not be aesthetically pleasing. Earthworms can build up in large numbers in moist and soft soil rich in organic matter. Generally, their activity represents a good fertile soil and no chemical treatment is recommended.

Earthworms are hermaphroditic (all have both male and female reproductive organs), but not self-fertile. Because of these features, under moist and good soil conditions they can build up in large numbers. This may present a problem in many close-cut grasses like bentgrass in golf courses. Often raking will take care of the problem.

If the problem is very severe, application of diazinon twice at two-week intervals will provide some control. Check with your county cooperative extension agent about any state regulation concerning earthworm control. Read and follow label specifications for best results.

Composting clippings

Problem: *During the growing season, our mowing service generates a lot of grass clippings. We are thinking of composting it. How long should we wait before using the composted clippings in the garden or around landscape plants? (Michigan)*

Solution: Follow normal procedures for composting and wait for six months to a year before using the composted clippings in the garden or around landscape plants. As a precautionary step, you can do a radish seedling bio-assay. Plant a few radish seeds in the composted clippings in the ground or in a container. If the seedling grows without any growth distortion, the composted clippings can be used for any landscape or gardening work.

Managing moss

Problem: *We are thinking of doing some no-till renovation using Roundup. The problem is that in a number of our clients' lawns there is a heavy growth of moss. Will the Roundup take care of moss problems? If not, what can be done to manage this? (New York)*

Solution: During no-till renovation procedure, Roundup can be effectively used to manage most of the undesirable vegetation. Moss plants are not included in the Roundup label and a Monsanto representative indicated that Roundup may not be able to take care of moss problems.

The first step in managing a moss problem is to identify the primary reasons why moss is growing in a particular location. Infestation of moss is associated with low fertility, poor drainage, too much shade, soil compaction, wet conditions, poor air circulation or a combination of these factors.

Some, but not all, cases of moss growth may be related to acid or alkaline soil conditions. To manage moss problems, identify the cause(s) and provide corrective measures. Ammonium sulfate (10 lbs./1000 sq.ft.) applied on actively growing moss plants has reportedly been effective. Reports indicate that ammonium sulfate can help the turf fill in as the moss thins.

Another material, copper sulfate (3 tbsp. in 5 gal. water/1000 sq.ft.) also can be used to manage moss problems. Make sure to wear protective clothing and gloves. Copper sulfate can stain and is difficult to remove from clothing.

Cooling fertilizer burn

Problem: *We are a liquid lawn care company. We have used urea in our program in the past and have had some burn problems. We would like to use some low-burn fertilizers. What can we use? Please make your comments about these sources and their performance in relation to urea. (Pennsylvania)*

Solution: To deal with fertilizer burn, you could use low-burn nitrogen sources, such as Fluf (18-0-0), a suspension nitrogen source manufactured by W.A. Cleary Chemical Corp; Formolene (30-0-1.6) a liquid nitrogen source from Hawkeye Chemical Co.; or Nitroform (38-0-0) a ureaform fertilizer manufactured by Nor-Am Chemical Co.

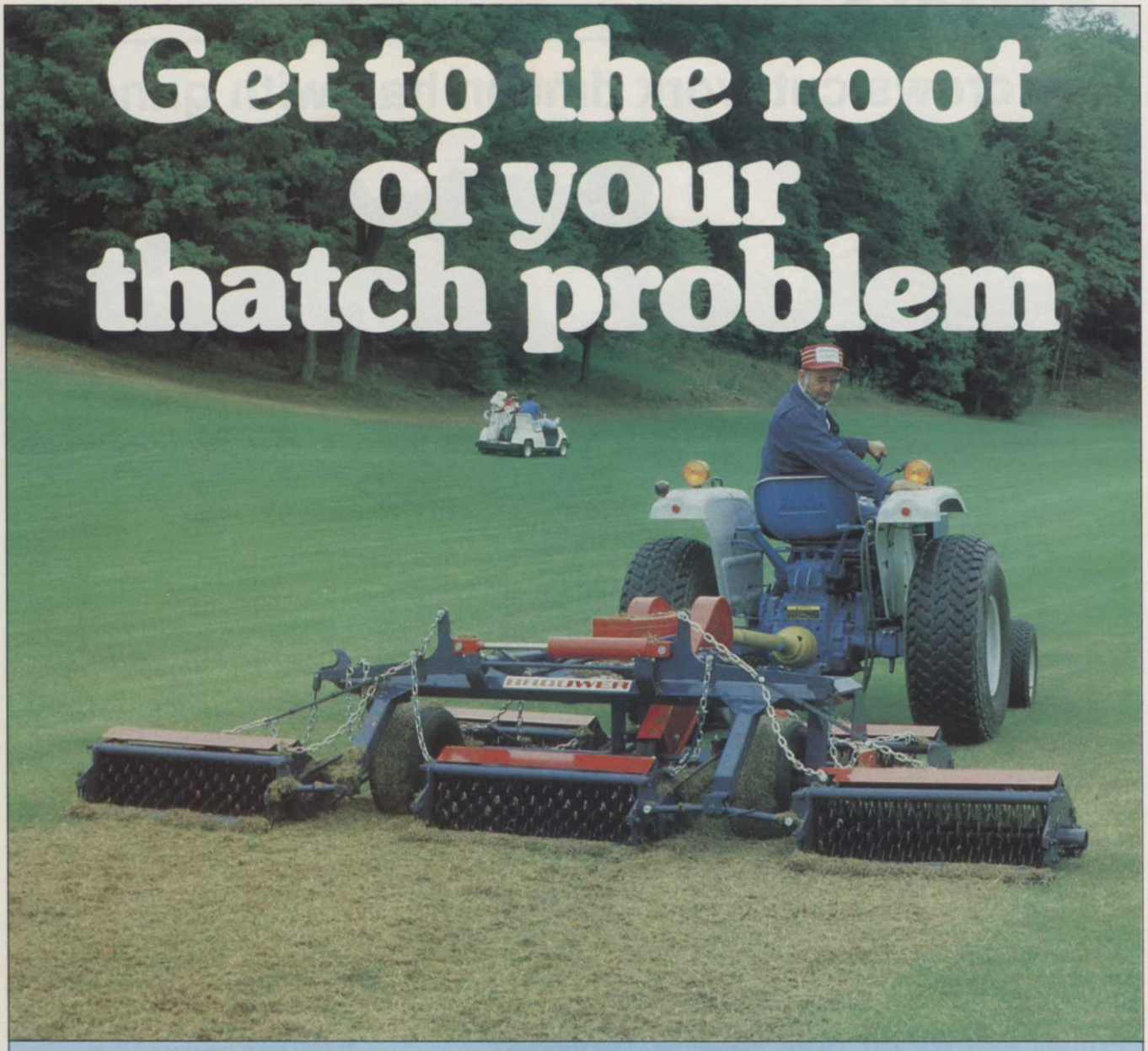
Reported research indicates that Kentucky bluegrass treated with spray-applied urea results in better color than bluegrass treated with either Nitroform or Fluf during the spring growing season. However, this trend is reversed by late summer. This means that urea can be used successfully during spring. Then as the temperature increases and soil moisture decreases, incorporate the low-burn potential products.

During the heat of the summer, reduce the amount of urea in the program and replace with low-burn nitrogen. If possible, use only the low-burn potential products. Later in the season, as the temperature begins to decline, the amount of urea can be increased and low-burn potential materials can be reduced or eliminated.

Balakrishna Rao is Director of Lawn Care Technical Resources for The Davey Tree Co., Kent, Ohio.

Questions should be mailed to Problem Management, Landscape Management, 7500 Old Oak Boulevard, Cleveland, OH 44130. Please allow 2-3 months for an answer to appear in the magazine.

Get to the root of your thatch problem



5 Gang Hydraulic Lift Verti-cut

Have? A thatch problem

Want? Improved aeration, water, fertilizer and chemical penetration

Like? Better results in overseeding, prevention of thatch build-up and disease control

If yes . . . Do it with a Brouwer Verti-cut

Outstanding Features:

- Easy to transport and store
- Economical to buy and maintain
- Simple design using standard parts
- Quick setting for depth of cut
- Low horsepower requirement - 35 H.P.
- Width of cut 138" (350.5 cm)
- Blade spacing can be easily changed

BROUWER
TURF EQUIPMENT LIMITED

7320 Haggerty Rd./Canton, MI. 48187 Telephone (313) 459-3700
Woodbine Avenue/Keswick, Ontario, Canada L4P 3E9 Telex 065-24161 Telephone: (416) 476-4311

Circle No. 102 on Reader Inquiry Card

City crews cut work time in half with grinder

The Promark root grinder saves crews time when removing trees.

Beautiful things, trees. But, they can sometimes create problems with city sidewalks.

"If trees aren't watered properly, the roots sometimes start coming up," says Danny Mendez, public works and street supervisor for the city of Fontana, Calif. "Here in Fontana, we get lots of complaints."

Fifteen years ago, city crews planted ash saplings in parkways and dividing strips between sidewalks and roadways in new housing developments. Today, the backlog of root-cutting jobs is enough to keep the department busy for weeks on end.

Ash trees do not drive their roots very deeply into the soil. Instead, the roots push outward seeking water at the surface and two to three inches below the surface. The exposed roots can eventually become a nuisance, creating hazardous conditions and liability problems, destroying concrete sidewalks, curbs, driveways, sewer and drainage lines.

According to city workers Herm Zander and Leo Bishop, the job of cutting the roots on one side of one tree used to take two men three to four hours each with axes, shovels, crowbars and picks. Then, 1½ years ago, director of maintenance services Guy Patterson ordered a Model 16SP stump and root grinder from Promark Products West.

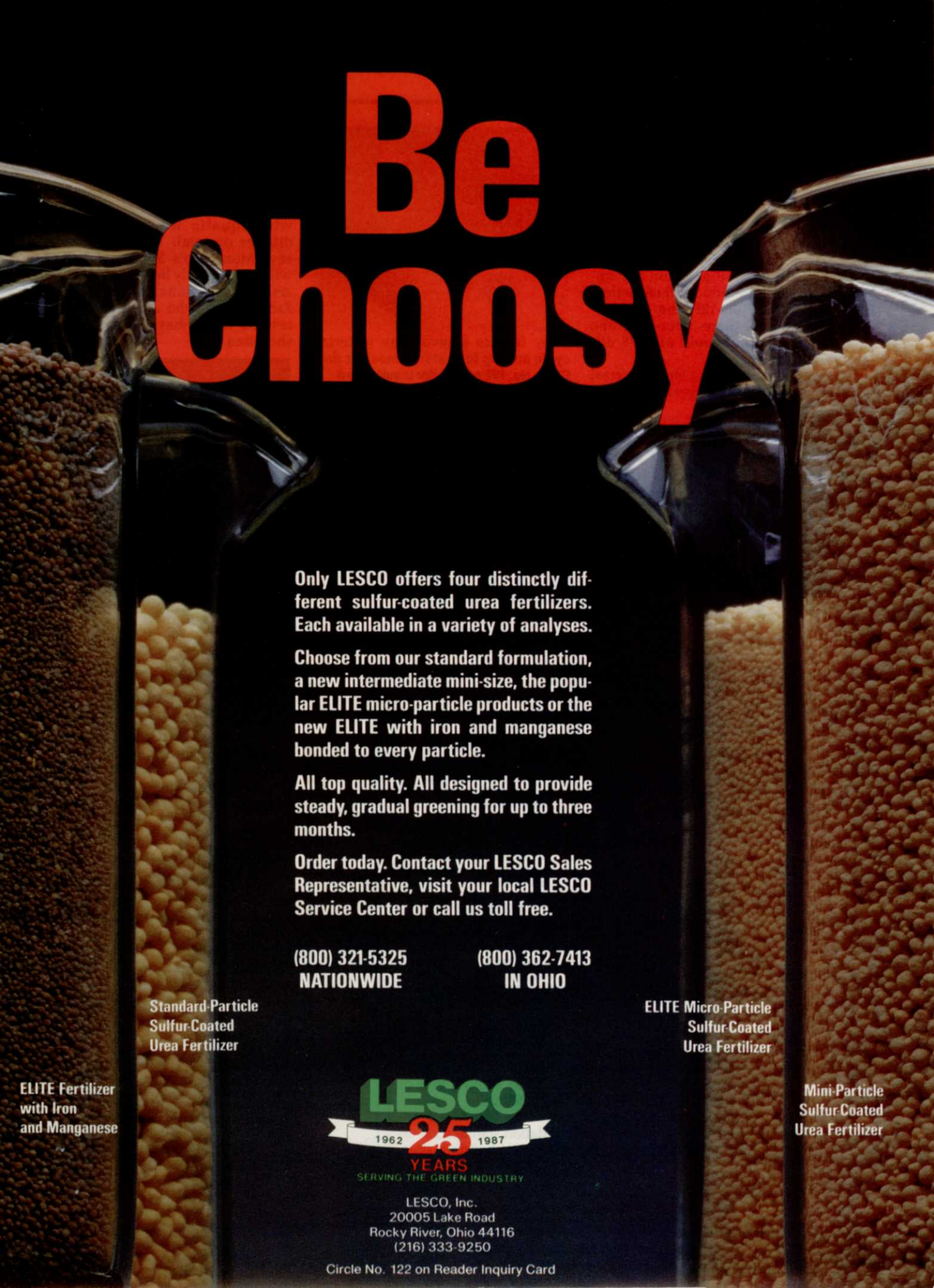
"It's real handy," claims Mendez. "It saves our crew a tremendous amount of time. We try to save as many trees as possible, but when we have to remove one it takes less than an hour. Sidewalk repairs only take a few minutes. I wish we'd've gotten the grinder a long time ago."

Mendez says that the grinder is also very inexpensive to maintain. Blades which sell for approximately $35 a set are replaced once a year.

Zander and Bishop cite the cutter wheel's location as a handy feature. It is out back where the operator can see it and visually guide its path without endangering himself, the tree or the machine.

"I don't know how we got along without that grinder," says Patterson. **LM**

Danny Mendez (right) gets some tips about the Promark grinder from one of the workers who uses it in Fontana, Calif.


Be Choosy
Only LESCO offers four distinctly different sulfur-coated urea fertilizers. Each available in a variety of analyses.
Choose from our standard formulation, a new intermediate mini-size, the popular ELITE micro-particle products or the new ELITE with iron and manganese bonded to every particle.
All top quality. All designed to provide steady, gradual greening for up to three months.
Order today. Contact your LESCO Sales Representative, visit your local LESCO Service Center or call us toll free.
(800) 321-5325 NATIONWIDE
(800) 362-7413 IN OHIO
Standard-Particle Sulfur-Coated Urea Fertilizer
ELITE Micro-Particle Sulfur-Coated Urea Fertilizer
ELITE Fertilizer with Iron and Manganese
Mini-Particle Sulfur-Coated Urea Fertilizer
LESCO
1962 25 1987
YEARS
SERVING THE GREEN INDUSTRY
LESCO, Inc.
20005 Lake Road
Rocky River, Ohio 44116
(216) 333-9250
Circle No. 122 on Reader Inquiry Card

Irrigation products combine efficiency and durability

Toro's Irrigation Division has introduced new irrigation equipment designed to operate systems efficiently. The 570C-12P (pictured), the latest in Toro's 570C Fixed Spray Series, features the company's Conilip™ seal and cap configuration for improved seal and reduced flush action.

With the 570C-12P, the Conilip™ series includes three-, four-, six- and 12-inch pop-up models with 75 different nozzles.

Also, Toro has put a stainless steel sleeve around its 610 gear-driven rotary sprinkler.

The company has also introduced two Custom II series controllers available in either hydraulic or electric with a choice of eight or 12 stations.

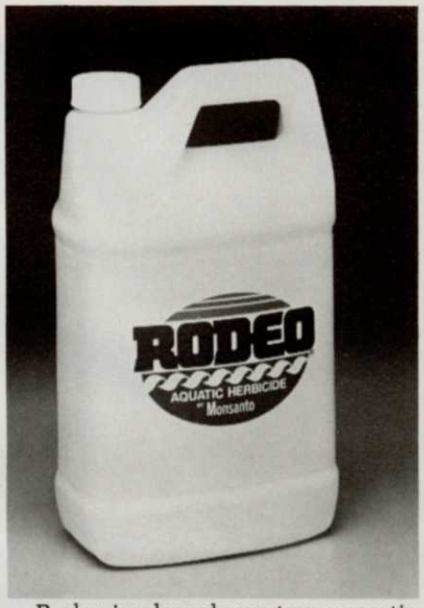
They feature a seven-day watering cycle and up to 11 start times per day.

Circle No. 192 on Reader Inquiry Card

Aquatic herbicide in gallon containers

Rodeo aquatic herbicide from Monsanto is now available in one-gallon containers. Users can order by telephone for direct delivery.

"This will be very convenient for those who have just a small problem with aquatic weeds in drainage ditches or small retaining ponds," says Monsanto's Sharon Gabel. "It will be especially helpful to owners of small recreational swimming and fishing lakes who are troubled with cattails which have taken over the shoreline."



Rodeo is a broad-spectrum aquatic herbicide that provides effective control of more than 160 emerged grasses, brush and broadleaf weeds.

Circle No. 193 on Reader Inquiry Card

HOLD IT!

STANDARD SPECIFICATIONS:

STAPLES: Steel wire of 11 gauge (.120") diameter bent into a "U" shape, flat tops, with 1" between the two parallel legs of 6" standard length.

SOD PINS: Steel rod of 3/16" (.187") minimum diameter, sharp on one end and with a steel washer of 1½" minimum diameter captured on the opposite end.

"L" SHAPE: Steel wire of 9 gauge (.148") diameter, with the standard lengths being 4"x6" 4"x8" and 4"x12". Other Dimensions Available Per Your Specifications.

MAR MAC®

Mar-Mac staples, sod pins and "L" shapes are made to meet all current geotextile standard installation specifications, and Mar-Mac can also make staples, pins or "L"s to meet any customer specification.

Some of the many applications of the Mar-Mac products are erosion control and foundation stabilization on golf courses, airports, strip mines, and building sites.

Toll Free 1-800-845-6962

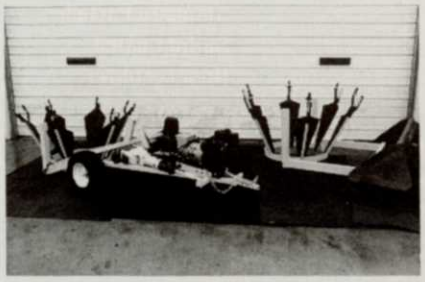
MAR-MAC MANUFACTURING CO., INC.

P.O. Box 278, McBee, South Carolina 29101

Circle No. 126 on Reader Inquiry Card

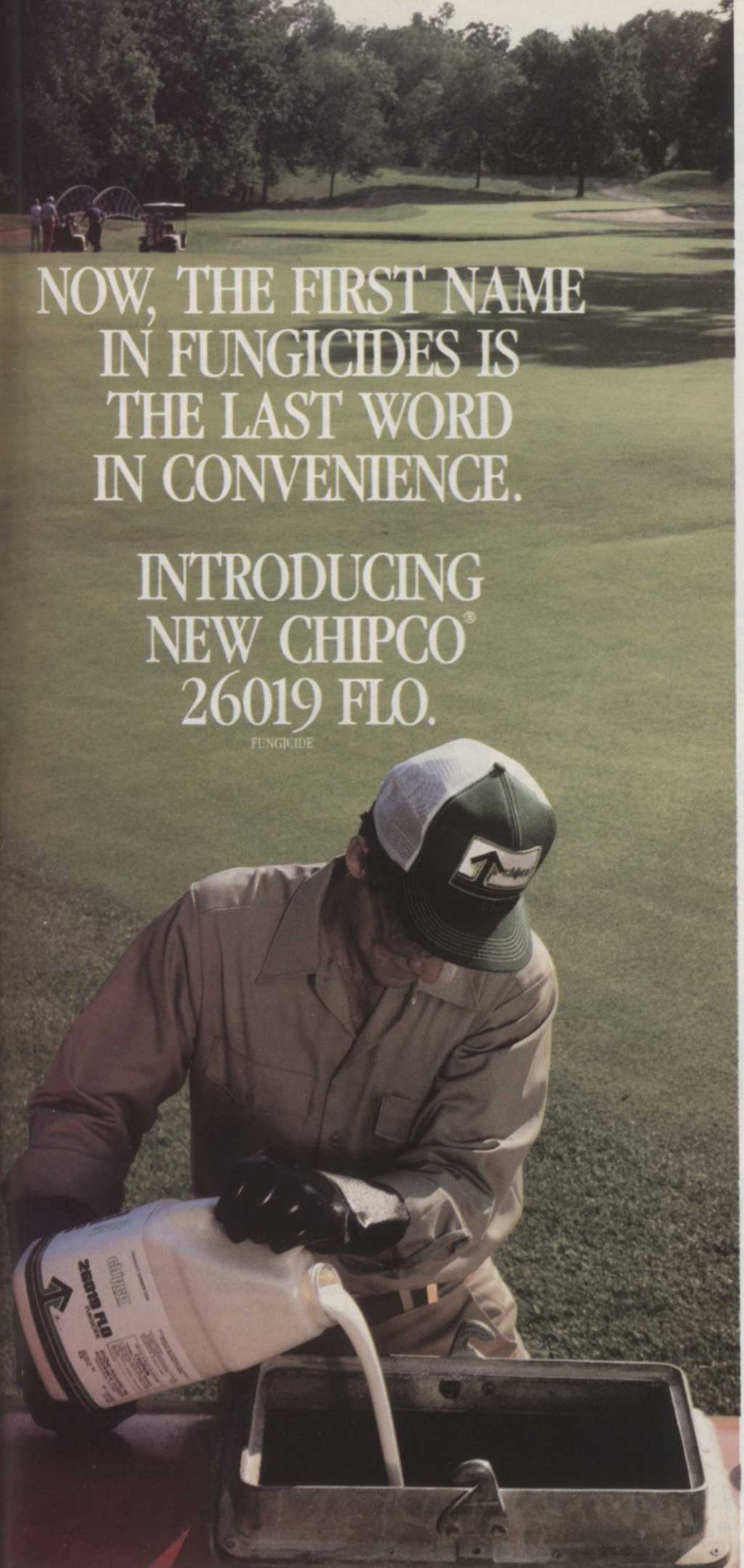
Tree transplanter is completely self-contained

The tree transplanter from Mid-Dakota is completely self-contained, can be towed by anything and goes anywhere a garden tractor goes without damaging lawns or underground sprinkler systems.



The size of the rootball can be set exactly for each trunk diameter through 2½ inches, making it useful for potted trees and shrubs. The towa-

continued on page 74



NOW, THE FIRST NAME IN FUNGICIDES IS THE LAST WORD IN CONVENIENCE.

INTRODUCING NEW CHIPCO® 26019 FLO.

FUNGICIDE

The easy way to stop major turf diseases for up to four full weeks.

Thousands of golf course superintendents have discovered one important fact. You just can't beat Chipco 26019 fungicide for controlling turf diseases.

And now you can get all the advantages of Chipco 26019 wettable powder in a convenient flowable formulation. New Chipco 26019 FLO.

Like the wettable powder, new Chipco 26019 FLO offers unsurpassed protection against major turf diseases, including Helminthosporium Leaf Spot and Melting Out, Dollar Spot, Brown Patch, Fusarium Blight, Red Thread, Fusarium Patch, plus Gray and Pink Snow Molds.

Chipco 26019 FLO also delivers the same long-lasting residual control. In fact, both Chipco 26019 formulations protect your turf for up to 28 days.

With Chipco 26019, you also get the added benefits of convenience, no phytotoxicity, pesticide compatibility, low toxicity and no corrosiveness.

Wettable Powder or new FLO, it's easy to see why Chipco 26019 is the Number 1 name in turf disease control.

Rhone-Poulenc Inc., CHIPCO Department, P.O. Box 125, Monmouth Junction, NJ 08852.

RHÔNE·POULENC

CHIPCO® 26019

FUNGICIDE

Please read label carefully and use only as directed. CHIPCO® is a registered trademark of Rhone-Poulenc Inc.

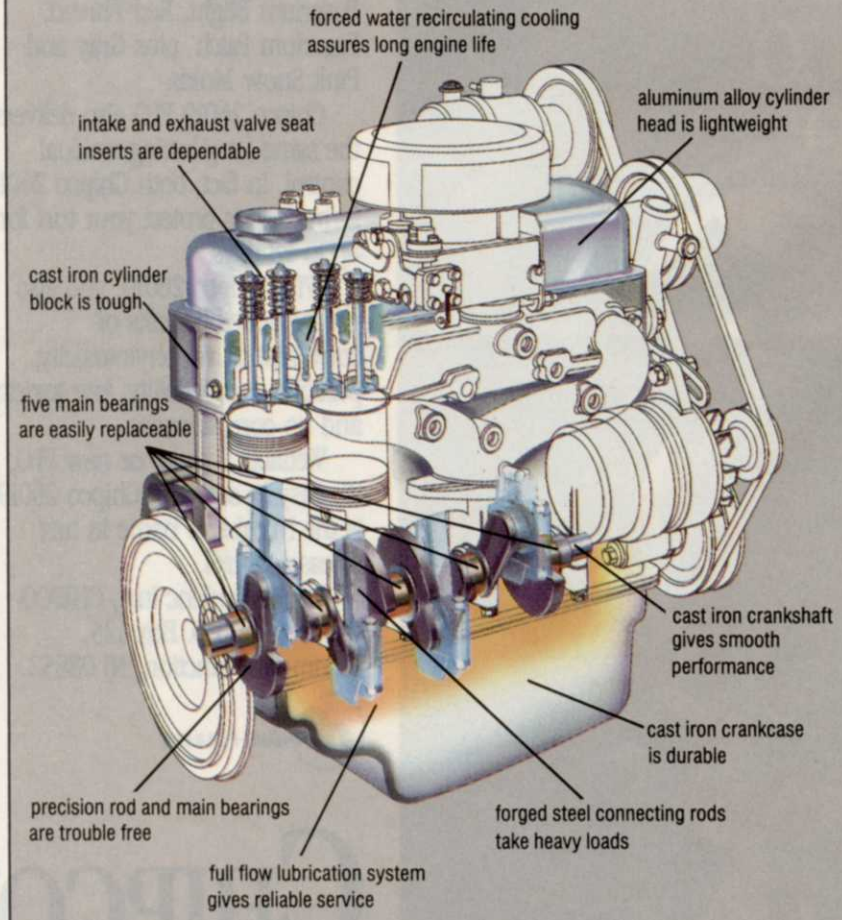
Circle No. 140 on Reader Inquiry Card

10 reasons why you should ask for a Continental R-Series engine

High performance, long life design — that's what the Continental R-Series liquid-cooled engines from Teledyne Total Power can offer you.

Take a look at the counterweighted spheroidal cast iron crankshaft with five main bearings and forged steel connecting rods... right down to the cast iron cylinder block and crankcase, you can depend on the quality to keep up with your equipment.

Ask for Continental R-Series engines from Teledyne Total Power, with over 5,000 distributors and service centers in over 90 countries ready to serve you. Send for your free "Reasons Why" brochure today: Teledyne Total Power, P.O. Box 181160, Memphis, TN 38181-1160, 901/365-3600, Telex: 462-1058 (ITT)


forced water recirculating cooling assures long engine life
intake and exhaust valve seat inserts are dependable
aluminum alloy cylinder head is lightweight
cast iron cylinder block is tough
five main bearings are easily replaceable
cast iron crankshaft gives smooth performance
cast iron crankcase is durable
precision rod and main bearings are trouble free
forged steel connecting rods take heavy loads
full flow lubrication system gives reliable service

TELEDYNE TOTAL POWER

3409 Democrat Road • Memphis, TN 38118

Call toll-free: **1-800-932-2858**

R-11/14

Circle No. 146 on Reader Inquiry Card

PRODUCTS *from page 72*

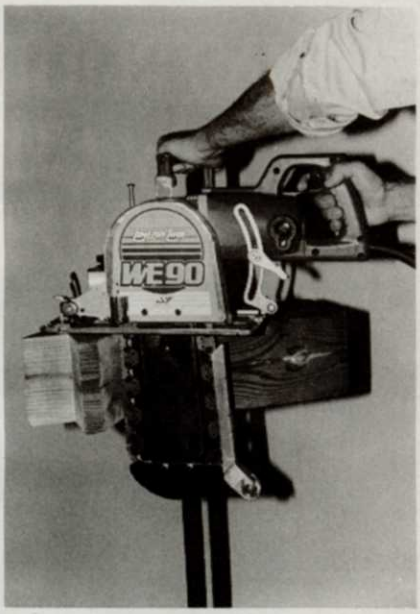
ble transplanter is $4,500, the transplanter for mounting in a bucket or loader is $1,500.

Circle No. 194 on Reader Inquiry Card

Power saw introduced at Landscape Expo

The Linear Link, a portable power saw from Progressive Power Tools, was unveiled at the Landscape Exposition in Chicago, March 3-5.

The saw leaves a smooth cut on landscape timbers used for building planters, decks, railings and other structures. The saw can cut notches without overcutting, has an eight-inch cutting capacity and cuts angles to 45 degrees.



Safety features include a full upper blade guard, a non-removable tip guard and rear pivoting blade guard.

Blue colorant marks path of spray application

Turf Mark, a blue color spray indicator, shows where spray is applied. The temporary colorant is a formulated concentrate that mixes easily with pesticides and fertilizers or other plant growth-regulating chemicals. Amount of colorant concentrate can be varied for more or less color intensity.

The colorant helps eliminate spray overlap, over-application, skips and drift. It can be used in spot spraying or broadcast application. The colorant comes in poly bottles with self-calibrating spouts, in one quart or one gallon sizes.

Circle No. 196 on Reader Inquiry Card

continued on page 76

The Bare Facts

USCO Landscapes project, Richmond, VA—SEED SHIELD was tested by a professional landscaper against straw in covering grass seed.
Both areas were identically prepared, seeded and subjected to the same growing conditions including a 6 week drought.
But then, after 1 week of identical watering, the SEED SHIELD covered side (left) showed dramatic germination results compared to the straw covered side (right).

Betty Staples, Owner
USCO Landscapes, Richmond, VA

"SEED SHIELD cuts germination time in half."

"I was skeptical about using SEED SHIELD at first," admits Betty Staples, a professional Richmond, VA landscaper. "But after using it on several commercial and residential projects since September, I am sold on it.

"On the average, using SEED SHIELD along with proper soil preparation and watering, I've been getting over 90% germination in 4-5 days for fescue. With a straw covering, it generally takes twice as long to get just 60% germination and considerably longer to get full germination.

"SEED SHIELD seems to hold just the right amounts of heat and moisture. I was able to get excellent fescue germination in October and November despite extreme weather conditions including drought and drastic temperature changes. Plus only one daily watering was needed instead of the usual 3 required with straw.

"It also solved a number of other landscaping problems. I got fewer bare spots. SEED SHIELD virtually eliminated debris from the new grass. It cut down on wash caused by rain. And it kept the birds from eating the seeds.

"I've recommended it to homeowners and other landscapers as being very cost-effective in the long run for producing faster, healthier sod quality growth. Plus it can let you seed earlier and later in the season than straw."

For faster, fuller grass and profit development, talk to A.C.F., Inc. about the unique, new SEED SHIELD fabric.

Distributorships Available

SEED SHIELD™
A.C.F., Inc.

Distributor for AMOCO

Manufactured by Amoco Fabrics & Fibers Co. for Atlantic Construction Fabrics, Inc.
10201 Jefferson Davis Hwy., Richmond, VA 23237 • Toll Free 1-800-448-3636. In VA 804-271-0633

Circle No. 101 on Reader Inquiry Card

FAST GREEN COVER UP

with CELLIN® FIBER MULCH

or with the new CELLIN® K LONG FIBER MULCH

HYDRAULIC MULCHING WITH CELLIN IS EASY, AND FAST, AND ECONOMICAL. SEED, FERTILIZER AND MULCH ARE MIXED INTO A SLURRY AND SPRAYED ONTO THE GROUND — IN ONE EASY STEP.

TACKING STRAW (OR HAY) MULCHES WITH CELLIN MULCH IS EFFECTIVE, AND FAST, AND ECONOMICAL.

CELLIN MULCHES ARE DARK GREEN, COMPLETELY FREE OF WEED SEEDS AND CONTAIN NO GROWTH INHIBITING FOREIGN MATTER.

CELLIN MULCHES ARE FORMULATED TO MIX READILY WITH WATER AND TO REMAIN EVENLY DISPURSED IN THE SLURRY.

PACKAGED IN 50 lb. HEAVY DUTY POLYETHYLENE BALES — EASY TO HANDLE, STACK AND STORE.

CELLIN® MANUFACTURING INC.
800/336-3074
703/690-1195

Circle No. 104 on Reader Inquiry Card

Water absorber handles 4,000 gal./hr.

The Super Sopper has been used in Australia for more than eight years. It is now available in the United States. The Sopper, available in four sizes, can handle as much as 4,000 gallons per hour (the Whale) for heavy duty

jobs such as fairways or outfields, down to smaller jobs such as greens or tennis courts.

The Sopper works on grass, sand, concrete, asphalt and other surfaces, absorbing one inch of water on each pass. Conversely, it can also be used to wet a surface after an event to help repair damage.

Circle No. 197 on Reader Inquiry Card

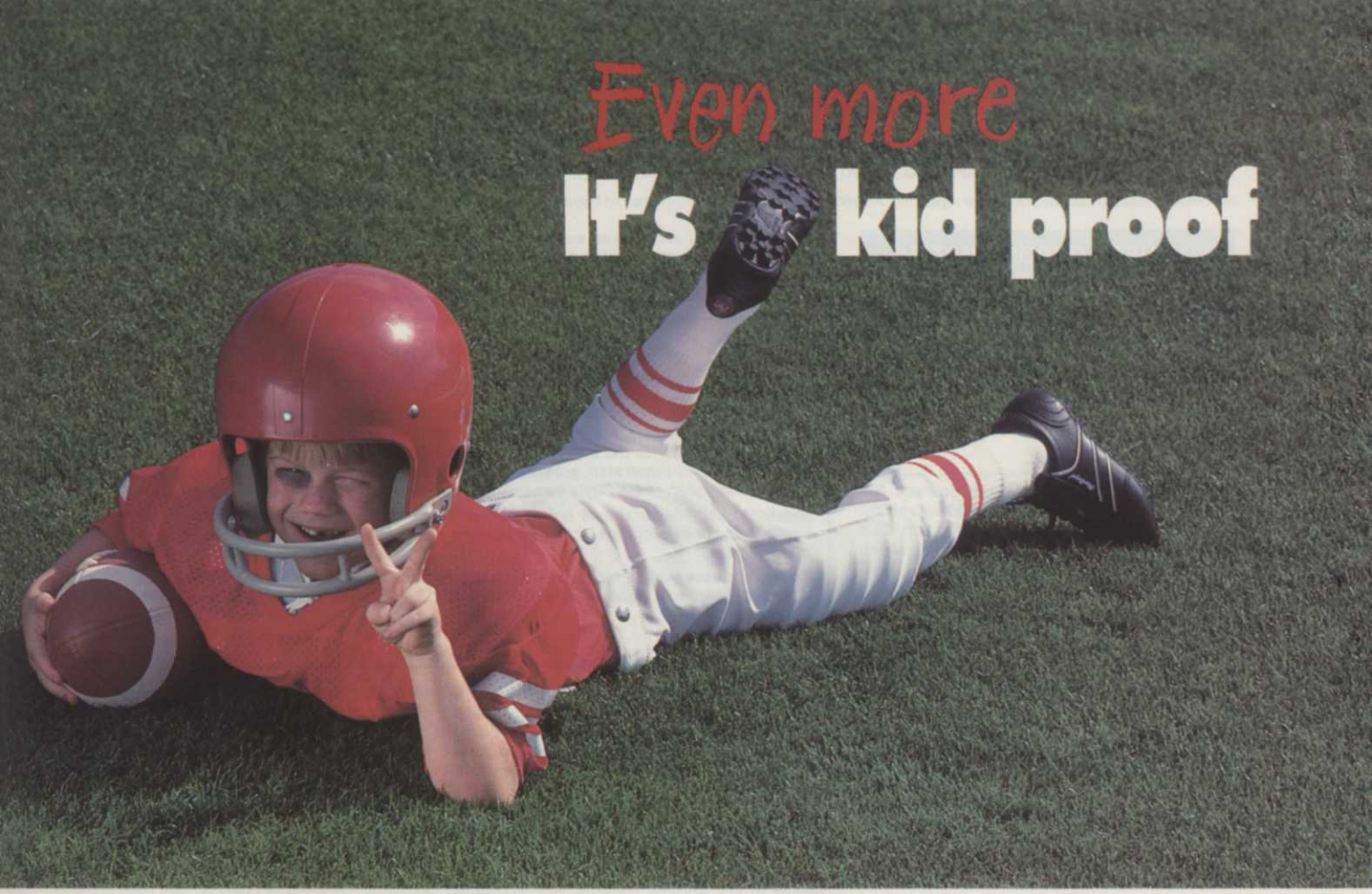
Wheel loader performs with power, durability

The Coyote C8 fully articulated loader goes where skid loaders go, handling buckets from 0.75 cubic yards to 1.25 cubic yards through means of a Z-bar linkage with one double-acting lift and one double-acting bucket cylinder.

It is powered by a Duetz four-cycle, two-cylinder air-cooled diesel engine generating 38 hp. Four-wheel drive

can be activated by the operator from the cab. The loaders feature a three-year/3,000-hour full drive train warranty.

Circle No. 198 on Reader Inquiry Card



Denser, darker green Manhattan II takes the bruises *for* your athlete

What goes up must come down . . . and that goes double for athletes' knees and elbows.

Improved Manhattan II perennial ryegrass has a built-in cushion developed through genetic improvement. The greater tiller density of Manhattan II takes the punishment athletes dish out, then springs back to retain its great-looking appearance. All that toughness . . . with improved mowability to boot!

Manhattan II also provides a darker green color than the old standard Manhattan; improved disease resistance, drought and shade tolerance as well as fertilizer savings.

Manhattan II was developed to save on maintenance costs . . . but the *real* saving is on knees and elbows!

"Fall on the leader"

Manhattan II

TURF-TYPE PERENNIAL RYEGRASS

Qualified turf associations can earn cash for turf research by saving Manhattan II blue tags. Contact your dealer for details.

Distributed by

Turf Merchants, Inc.
P.O. Box 1467 • Albany, OR 97321
Outside Oregon 800-**421-1735**
503/**491-3622** TWX **910-997-0733**

Turf-Seed, Inc.
P.O. Box 250 • Hubbard, OR 97032
503/**981-9571** TWX **510-590-0957**

Circle No. 148 on Reader Inquiry Card

CLASSIFIEDS

RATES: $1.00 per word (minimum charge, $25). Bold face words or words in all capital letters charged at $1.25 per word. Boxed or display ads: $85 per column inch-1x (one inch minimum); $80-3x; $75-6x; $70-12x. Agency commissions will be given only when camera-ready art is provided by agency. For ads using blind box number, add $5 to total cost of ad. Send ad copy with payment to Dawn Nilsen, LANDSCAPE MANAGEMENT, 1 East First Street, Duluth, MN 55802 or call 218-723-9200.

BOX NUMBER REPLIES: Mail box number replies to: LANDSCAPE MANAGEMENT, Classified Ad Department, 1 East First St., Duluth, MN 55802. Please include box number in address.

BUSINESS OPPORTUNITIES

Outstanding business opportunity available! Very, very fast growing tree, shrub and lawn care company on Long Island for sale by one of New York's leaders in the greens industry. Serving prestigious areas of Suffolk Counties North and South shore. Fully automated working environment. Three truck fleet completely equipped. Terms negotiable. Monday through Friday 9:00 - 5:00. 516-360-3361. 8/87

WANT TO BUY OR SELL a golf course? Exclusively golf course transactions and appraisals. Ask for our catalog. McKay Golf and Country Club Properties, 15485 N. East Street, Lansing, Michigan 48906. Phone (517) 484-7726. TF

Tired of working 12 hours a day for someone else's bottom line? Be your own boss! Earn your own profits! For as little as $6800 down you can join the LawnCare professionals at ServiceMaster. Call (312) 964-1300 ext. 2242 to receive information on how to get started. 12/87

HELP WANTED

Landscape Maintenance Salesperson position available with Yardmaster, Inc. in Cleveland, Ohio. Excellent compensation plan and benefits. Join Ohio's largest design/build and maintenance firm. Send resume or call **YARDMASTER, INC., 1447 N. RIDGE RD., PAINESVILLE, OH 44077, 216-357-8400.** 10/87

ESTIMATOR SALESPERSON: A diversified, growing, suburban Cleveland landscape firm has an opening for a landscape Estimator/Salesperson for commercial projects. Applicants must have experience in commercial landscape contracting and a college degree in a related field, ability to deal with landscape architects and general contractors needed. We are looking for a highly motivated individual with a proven record to help us grow. If you are qualified for this career opportunity, please send resume, work and salary history to Chagrin Valley Landscaping, P.O. Box 391002, Solon, OH 44139. 8/87

ARBORISTS: ASSISTANT FOREMAN AND FOREMAN positions available. Top pay and benefits including medical plan, paid sick and vacation time, education and year round work. You should be experienced in shade tree and ornamental pruning, landscape planting and spray operations. An excellent chance to work for a top quality company in suburban Boston. **CALL LUEDERS TREE AND LANDSCAPE** @ 617-359-4855 OR 617-444-0994. 8/87

LANDSCAPE MAINTENANCE AND CONSTRUCTION FOREMEN: Suburban Cleveland firm is seeking experienced individuals who can work together with other people. Must be hard working, organized and capable of directing a project from beginning to end. Salary commensurate with experience. Send resume to: P.O. Box 391002, Solon, OH 44139. 8/87

LANDSCAPE MAINTENANCE SUPERVISOR: Expanding landscape management firm seeking individual with supervisory ability and a minimum of two years experience in maintenance and/or installation. An agricultural related background or degree would be beneficial. Send resume with salary requirements to: Maintain Inc., 16008 Boss Gaston, Richmond, TX 77469, Attn: Branch Manager. 8/87

Sales Rep. North Jersey tree expert co. seeks responsible, experienced, sales oriented person. Excellent compensation for right individual. Send resume & salary history to LM Box 423. 8/87

NEED MANAGERS? Need qualified managers to run new or existing operations? Locate key personnel quickly. Call Beecher Smith, Green Industry Resources Corporation (301)253-5787.

CITY ARBORIST

The City of Urbana, Illinois, (pop. 38,000), home of the University of Illinois, and a TREE CITY U.S.A. for 11 consecutive years, seeks to fill an opening for City Arborist. The person who fills this position will be responsible for the administration of the City's tree planting and maintenance program; supervision of divisional staff; administration of the Arbor Division budget, including special funds; and administration of the City's tree ordinance and standards and special projects.

Interested candidates should hold a bachelor's degree with emphasis in forestry, ornamental horticulture, or appropriate biological science and three (3) years of work experience in arbor management.

To apply, please submit resume and introductory letter, salary history and expectations to: Ronald Gremore, Personnel Manager, City of Urbana, 400 South Vine Street, Urbana, Illinois 61801, before September 11, 1987.

(E.O.E.)

LANDSCAPE MAINTENANCE FOREMEN NEEDED: Expanding commercial landscape maintenance firm servicing Dallas/Ft. Worth areas. Knowledge of industry a must. Send resume to: **GROUNDS TECH INC.,** 2036 Bedford Road, Bedford, Texas 76021. 9/87

ASSISTANT TO PRESIDENT: Outstanding opportunity to join and grow with Westchester's fastest growing Tree Care Company. All benefits. Send resume to Ms. Michele Gerards, Sav-A-Tree of Westchester, Inc., P.O. Box 527, Armonk, NY 10504-0527. 8/87

HELP WANTED

Assistant Managers & Foremen

Excellent growth opportunity with Connecticut's largest landscaping firm. Complete Interior and Exterior Construction and Maintenance Departments. Candidates should have an "A.S." or "B.S." in Horticulture or equivalent in experience also two years experience supervising and motivating people. Excellent company benefits. Salary commensurate with experience. Send resume with education, experience, and salary history in confidence to:

Milford

MILFORD LANDSCAPING & MAINTENANCE, INC.
P.O. BOX 2-186
MILFORD, CT 06460
203-878-8748

Fleet Superintendent/Equipment Coordinator to perform maintenance on diesel/gas equipment 80 h.p. to 1 h.p. and coordinate the use of equipment throughout the state of Florida. Please send resume to Quandt-Ayer Enterprises, P.O. Box 271880, Tampa, FL 33688. 8/87

SEND YOUR RESUME IMMEDIATELY! We have open positions fo Lawn Care Branch Managers, Nursery Managers, Horticultural, and Landscape/Const. Managers. We computer file your resume and contact you when jobs open in your field or area you desire. Confidential placement from Green Industry Resources Corporation, 25230 Conrad Ct., Damascus, MD 20872, (301)253-5787. 8/87

PROJECT MANAGER: Excellent opportunity for career and goal oriented individual to work with a commercial landscape firm in Atlanta, Georgia. Must be experienced in all aspects of landscape construction and willing to assume total responsibility. Good salary, benefits and incentive program. Scapes, Inc. 404-956-7500. 8/87

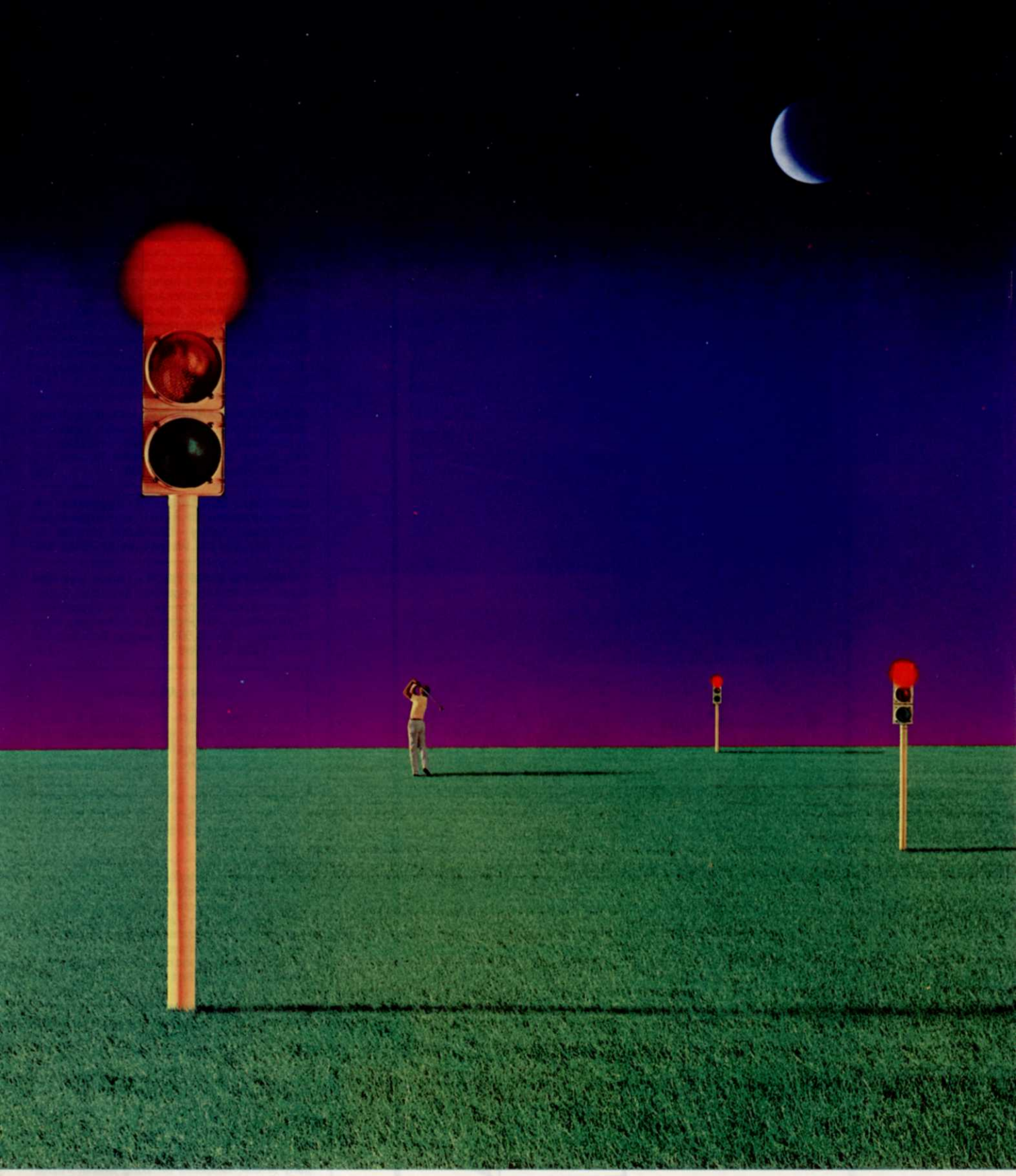
PO•TEN•TIAL - THAT CAN, BUT HAS NOT YET, COME INTO BEING; POSSIBLE. Established and expanding landscape Management Firm in D/FW area is looking for Account Representatives that are self-motivated & energetic individuals. Training, benefits, salary plus commission. Send resume/work history to John Delin, 2036 Bedford Road, Bedford, Texas 76021. 8/87

ARBORIST SALES POSITION: Outstanding opportunity to join and grow with Westchester's fastest growing Tree Care Company. All benefits. Send resume to Ms. Michele Gerards, Sav-A-Tree of Westchester, Inc., P.O. Box 527, Armonk, NY 10504-0527. 8/87

Gibbs Landscape Company - Landscape and grounds maintenance. High caliber people needed to assist award winning company doing quality work in Atlanta area. Must have good driving record, and transportation. Offer good pay, and benefits. If you are dependable and industrious, send resume: Attn: Mike Sherman, 4111 Burge Road, Smyrna, GA 30080. (404)432-7761. 9/87

TURF AND ORNAMENTAL APPLICATOR MANAGER - Located in the beautiful, horse country of Lexington, KY. The nation's 2nd oldest landscape nursery is looking to expand its pesticide/lawn/care department. Applicants must have experience in all phases of chemical application, record keeping, sales, personnel, customer relations, and department management. We are looking for a self-motivated person to fill this career position. Compensation includes a full set of benefits plus top pay. If qualified, please send resume and salary history to: Hillenmeyer Nurseries, Inc., 2370 Sandersville Road, Lexington, KY 40511, ATTN: Lee Gifford or call 606-255-1091. 8/87

LANDSCAPE MAINTENANCE SUPERVISOR: Scapes, Inc., a commercial landscape firm in Atlanta, Georgia, is seeking an individual who has strong management skills, as well as, extensive landscaping experience and knowledge of plants. Advancement potential — up to Division Manager — makes this position ideal for a goal oriented individual. 404-956-7500. TF



Stops leaf spot for less.

Dyrene 4.

It's the economical new formulation of a proven performer. So now you can keep leaf spot under control. Without your budget getting out of control. DYRENE 4 flowable turf fungicide. The stopper.
Mobay Corporation, Specialty Products Group, Box 4913, Kansas City, Mo. 64120

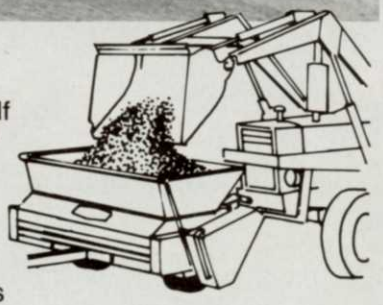
DYRENE is a Reg. TM of Mobay Corporation. 6-2254

Circle No. 128 on Reader Inquiry Card

TURFCO METE-R-MATIC II

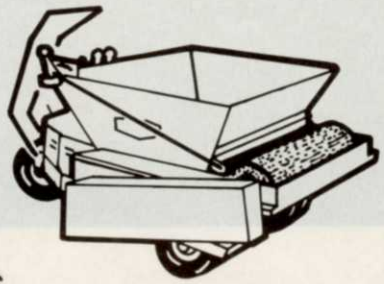
TOW-TYPE TOP DRESSER

Top dressing **levels existing turf** on athletic fields while stimulating growth and improving soil conditions. Repetitive top dressing **fills in the low spots** and also promotes the **decomposition of thatch.**



- Top dress 18 golf greens in under 6 hours
- Top dress an athletic field in under 2 hours
- 18.3 cubic feet hopper capacity
- Spreading width of 60"
- Top dress at up to 8 miles/hour
- Ground driven no engine to maintain

TURFCO also manufactures self-propelled and truckster-mounted **METE-R-MATIC TOP DRESSERS**



TURFCO MFG., INC.
3456 N. Washington Ave.
Minneapolis, MN 55412-2688

Ph. 612/588-0741
Telex 5106013762

TURFCO

Circle No. 147 on Reader Inquiry Card

HELP WANTED

Lawn Care and Lawn Maintenance Assistant Manager: Leading Horticultural Company since 1929 is seeking qualified applicant who is highly motivated, management oriented and strong in customer sales and service. Excellent growth opportunity and benefits. Salary commensurates with experience and performance. Send resume to: McNaughton's Nurseries, Inc., 351 Kresson Road, Cherry Hill, NJ 08034. 10/87

Established Central Florida landscape contractor has an opening for a highly qualified operations manager for its maintenance division. Ability to schedule, organize, and manage people in a rapidly growing organization. Heavy field experience, and a commitment to quality work required. Opportunity for an aggressive person to be a key member of a top notch team. Excellent salary and benefits. Call: Mr. Singh, 305-831-8101. 8/87

NURSERY MANAGER - Metro-Detroit landscape contracting firm. Horticultural degree, experience in purchasing, inventory control, wholesale nursery. Salary - $25-45,000, benefits. Resume: P.O. Box 314, Walled Lake, MI 48088. 8/87

LANDSCAPE DESIGN/SALES - Aggressive, self-motivated person. Minimum 2 years experience in design/sales. Salary - $25-45,000, benefits. Resume: P.O. Box 314, Walled Lake, MI 48088. 8/87

LANDSCAPE SUPERVISOR - Detroit area landscape firm, seeking motivated individual. Experience in residential, commercial landscape plans. Plant material and construction techniques. Benefits, salary - $25-35,000. Resume: P.O. Box 314, Walled Lake, MI 48088. 8/87

ORKIN LAWN CARE

Orkin Lawn Care is opening 4 new branch locations this summer and is **NOW** taking applications for experienced Lawn Care Managers and Assistant Managers. Areas include Florida, Texas, North Carolina. Send resume to Gordon Crenshaw, 2170 Piedmont Rd. N.E., Atlanta, Georgia 30324 or call 404-888-2771.

Landscape Architects/Supervisors (project foremen) to join a nationally acclaimed firm looking to expand into its second generation Long Island area supports a high budget landscape industry. Year round employment, company benefits and continuing education available. Experienced and aggressive people send resume to: **GOLDBERG & RODLER, INC.,** 216 East Main Street, Huntington, New York 11743. 10/87

CAREER OPPORTUNITIES: ChemLawn is now accepting applications for the positions of Lawn Specialist in our expanding Florida Markets. Join the Nation's Leader in Lawn Care. Send resume to LM Box 422. TF

HELP WANTED: Landscape, turf and spray foremen, nurserymen and pruners. Experience and/or education necessary to work for our dynamic, quality oriented, large, 40 year established company in the Hamptons on Long Island. Professional wages and benefits, year round, full time positions. Contact: Whitmore-Worsley Inc., P.O. Box 10, Amagansett, NY 11930. (516)267-3756. 9/87

MANAGEMENT: Ever-Green Lawns Corporation, a division of the multi-national Hawley Group, Ltd. is looking for experienced lawn and tree care professionals. Please respond in writing only to Richard D. Niemann, Corporate Recruiter, Ever-Green Lawns Corp., 1390 Charlestown Industrial Drive, St. Charles, MO 63303. TF

110 KINDS OF PLANTS. 43 TYPES OF INSECTS. 1 PRODUCT.

You're looking at a picture, not of a place, but of an idea: ORTHENE® 75 S and why it means so much to professional gardeners, nurserymen, arborists and golf course superintendents.

ORTHENE offers blanket protection against an amazing variety of insect pests. It's cleared for use on a long list of trees and plants, from orchids to roses and ponderosa pine. ORTHENE now has a federal label for use against mole crickets in turf—the main enemy of professionals' healthy greens and fairways.

By using ORTHENE, you kill pests like tent caterpillars, whiteflies, Japanese beetles and thrips on contact. Plus it provides lasting residual action against other insects from aphids to scale crawlers to sod webworms. It's a great way to make the whole job of protecting flowers, trees and turf simpler, and more effective.

If you're a professional in the plant care industry, ORTHENE can actually make it easier to do a better job of protecting plants. You ought to know more about it. To find out, send in this coupon.

Avoid accidents: For safety, read the entire label including precautionary statements. Use all chemicals only as directed. Copyright © 1986 Chevron Chemical Company. All rights reserved.

ORTHENE.

Chevron

ORTHO

Chevron Chemical Company

Mail to:
ORTHENE Product Manager (WTT)
Chevron Chemical Company
575 Market Street
San Francisco, CA 94105

Please send me more information on ORTHENE.

Name

Company

Street Address

City

State Zip

Circle No. 221 on Reader Inquiry Card

To find an FYLKING elite FYLKING bluegrass FYLKING at a FYLKING friendly FYLKING FYLKING price, you FYLKING FYLKING ought to FYLKING FYLKING read FYLKING between FYLKING FYLKING the lines.

Compare Fylking's competitive price and advantages! Fylking forms a thick, lush turf that has improved disease and drought resistance. Fylking greens up earlier, stays green longer; can be cut as low as ¾ inch—even ½ inch. Fylking has been proven over many years of international turf testing.

Ask your seed distributor for Fylking.

FYLKING

KENTUCKY BLUEGRASS

U.S. Plant Patent 2887

Another fine, quality controlled product of Jacklin Seed Company

Circle No. 118 on Reader Inquiry Card

LANDSCAPE MAINTENANCE SUPERINTENDENTS AND FOREMEN: Excellent opportunities for hard working, experienced individuals to work with an expanding Southern California commercial maintenance firm. Ability to plan, organize and supervise essential. Positions available in Los Angeles, Orange and San Diego Counties. Excellent salary and benefits. Send resume to or call: **PACIFIC GREEN CARE,** 1065 No. Batavia, Orange, CA 92667, 714-633-2404. 9/87

GROUNDS SERVICE SUPERINTENDENT up to $2,901 approx. monthly (plus an extensive benefits package). San Bernardino County is recruiting for a Grounds Services Superintendent who will be responsible for directing, planning, designing and supervising the landscaping and maintenance of grounds and gardens adjacent to County facilities. One year of experience in managing and supervising a large landscaping and maintenance operation in a governmental, industrial or business environment is required. In addition, 24 semester (36 quarter) units of completed college level coursework in landscape, design and/or horticulture is also required. San Bernardino County is located in sunny Southern California approximately 60 miles southeast of Los Angeles. Qualified applicants should apply by August 28, 1987 at San Bernardino County Personnel Office, 157 West 5th Street. San Bernardino, CA 92415 (714/387-5591/8304). 8/87

Parkway's Maintenance Supervisor: the City of New Orleans — Parkway and Park Commission is seeking a professional with strong management skills to head a grounds maintenance division. This position requires highly responsible technical, administrative, and supervisory work in directing and supervising employees engaged in the maintenance of parks and medians. Degree in horticulture, park management, or closely related field plus one year of supervisory experience required. Starting salary is $1,791.00 monthly with excellent benefits. Send resume to New Orleans Parkway and Park Commission, 2829 Gentilly Blvd.; New Orleans, LA 70122. 8/87

FOR SALE

BROUWER SOD HARVESTER - 1974 - 18" Rolling unit with steel mat & cross conveyor on Ford 3000 diesel - 4758 hours - $13,500.00. Shore Tractor, New Jersey - 201-462-8822. 8/87

STAINLESS STEEL TANK BODIES available. 4 pots each, 800 gallon and 1,000 gallon with dry storage to mount on your chassis. $2,000-$3,000 or offer. Call Jim Doll (301) 840-5500. 8/87

SPRAY TRUCK - 3 Chev. 1981 C-60D Chasis, auto trans, stainless steel tank body, 1200 gallon (4 pot) with 4 reels, 2 - 12 hp Kohler pony engines, 1 - 9200 Hypro, 1 - D-10 Hydro Cell with dry storage capability and 2 Chev. 1983 C-70D, auto trans. with body and equipment stated above. As is $14,500 or offer. Call Jim Doll (301) 840-5500. 8/87

(2) 1984 GMC 6,500 series - 22 K miles, 35 GPM hydro pump, 23 h.p. Kohler engine, 750 gallon tank, reel, hose, etc. Truck - $9,995, Truck with sprayer - $14,995. (1) 1982 factory built (DO6O1000) Bean, 60 GPM, 1,000 gallon tank, 65 h.p., Wisconsin engine, reel, hose, etc. Replacement costs new. $22,070. Steal it at $9,995. Ask for Paul, 516-582-8000. 8/87

Vermeer 630 Stump Grinder. Excellent condition and well maintained. Area Code (717) 898-8591 or 898-7443 After 5 p.m. 9/87

JACOBSEN MOWER AND TRACTOR - 1982 5 Gang Ram Lift Hydraulic Powered Mower and G-20 Diesel Powered Turf Tractor. Less than 150 hours operating time. 214-692-3303, Mr. Sims, $18,000. 8/87

The proof is in the putting.

The Greens King® IV with the revolutionary new Turf Groomer™ greens conditioner has no equal for producing faster, truer greens, *without* lowering height of cut.

This unique, patented greens care system, a Jacobsen exclusive, concentrates on troublesome thatch and horizontal runners that can slow down putting, or even throw off putting accuracy.

The front roller "puckers up" horizontal runners and plant leaves, readying them for clipping.

Then, the powered knife blades rotate *through* the slots in the front roller, cutting horizontal runners and removing thatch that can choke a green to death.

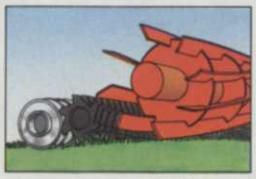
The reel follows closely behind, neatly cutting the grass while it's still standing straight and true.

The result: Faster, truer putting and healthier, hardier greens, ready for play. And, you get all this without reducing the height of cut.

So, contact your Jacobsen Distributor to arrange a free demonstration. And, put this revolutionary new greens care system to the test on your own proving ground.

Exclusive roller design features bevelled edges to "pucker-up" horizontal runners.

The knife blades rotate through slots in the front rollers, slicing horizontal runners before they lie down.



The horizontal reel follows closely behind to clip grass while it's standing straight, for faster, truer greens without lowering height of cut.

Finance plans available. Jacobsen Division of Textron Inc., Racine, WI 53403. Telex: 264428.

Greens King and Turf Groomer are trademarks of Jacobsen Division of Textron.

JACOBSEN
TEXTRON

Jacobsen Division of Textron Inc.

© Jacobsen Division of Textron Inc. 1986 J-15-6

Circle No. 119 on Reader Inquiry Card

FOR SALE

STAINLESS STEEL TANK BODY - 1200 gallon (4 pot), 4 reels, 2 - 12 hp Kohler pony engines, 1 - 9200 Hypro, 1 - D-10 Hydro Cell with dry storage ready to mount on your truck. As is $8,500 or offer. Call Jim Doll (301) 840-5500 8/87

Spray truck - 1978 Ford F600, excellent condition only 26,000 miles. 2 year old Meyers pump powered by 8 h.p. Briggs and Stratton engine, all new tires. (319)355-0153. 8/87

ATTENTION GOLF COURSE SUPERINTENDENTS: Great Meyer Zoysia for your Fairways and Tees. Guaranteed Bermuda free. Beauty Lawn Zoysia (Cincinnati) 1-513-424-2052. 2/88

FOR SALE: 1980 Toro Parkmaster HTN, 7 gang, 7 reel, 7 blade and a 1980 FMC D020 300 Gal. Sprayer. For more information call 305-225-1200, FL. 8/87

FOR SALE - Pest Control Company in fast growing Central Florida. Accounts in most exclusive neighborhoods for both inside and outside pest control, lawn fertilization and chemical pest control. Steady growth over last six years. Anticipated annual sales 1987 - $100,000.00. Certified Operator available for transition period. Call or write McDaniel Pest Control, Attn: M. McDaniel, 551 Fir Court, Altamonte Springs, FL 32714 (305) 293-4929. 8/87

TREE FERTILIZATION GUN tested on over a million square feet of trees and shrubs all over the U.S. Good to 500 psi, repairable, non-corrosive. Buy direct from manufacturer, $106.00 (shipping included). Arbor-Nomics, Inc., 585 Langford Lane, Norcross, GA 30071. (404) 447-6037. TF

POND LINERS: 20 and 30 Mil P.V.C. Liners made to order and shipped in three to five days. Installation available; Colorado Lining Company (303) 841-2022. 9/87

SELECTIVE CONTROL
Of Weeds, Brush And Weed Trees!

PHILLIPS APPLICATOR

Spot treatment cuts labor, materials. Automatic — Adjustable — Accurate.

CALL OR WRITE
Eidson Associates, Inc.
P.O. Box 16073, Minneapolis, MN 55416
(612) 926-9711 • Telex 272636

FOR SALE: Large Southern California tree maintenance corporation geared toward municipal and governmental contracting. Forty person employee base with over $750,000 in equipment. Three million gross in 1986 with steady growth pattern. Year around work with over 1.5 Million currently in contract backlog. Owner will run for one year. Terms and price negotiable. Serious inquiries only. Write to LM Box 428. 8/87

SPRAY TRUCK: 1984 International. With 1000/250 gal. tanks, Meyers pump, 2 Hannay reels, each with 400 ft. hose, very well maintained, professionally serviced, excellent condition. Has bedrails, spreader brackets, hand-sprayer holders, new paint. Call 203-372-3511, Tony or Bob. 8/87

FOR SALE: Hydro Ax, Model 520, Brush Cutters. Serial # 331 - 1976 - $35,000; # 314 - 1975 - $35,000; # 162 - 1974 - $35,000. Engines rebuilt, good cutter heads, good tires. W. A. Kendall and Co., Inc., R/W Clearing Contractors, Lawrenceville, Georgia, (404) 963-6017. 8/87

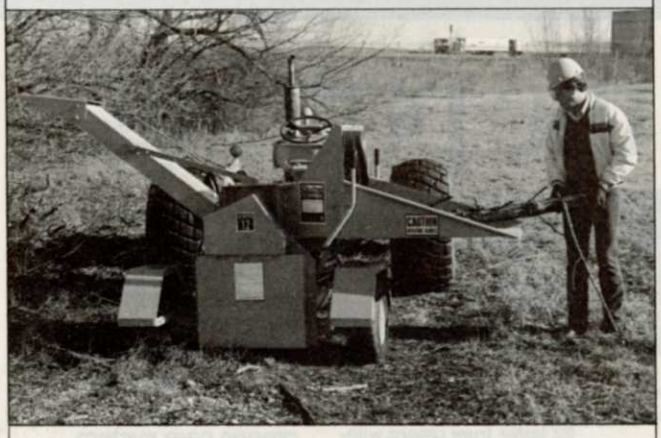
ENCLOSED CUSTOM LANDSCAPING TRAILERS. Protect your investment from exposure and theft. Choice of colors, delivery available. **NORTHWEST TRAILERS,** Palatine, IL 800-522-6208 or 312-577-6208. 8/87

ZOYSIA MEYERS Z-52 SOD OR SPRIGS. EXCELLENT QUALITY DELIVERED ANYWHERE AT REASONABLE PRICES. ALSO ROW PLANTING AVAILABLE. DOUBLE SPRINGS GRASS FARM, SEARCY, AR. (501) 729-5691. TF

BROUWER HARVESTER OWNERS! ELECTRIC DEPTH CONTROL. Save time and money with improved quality control. Make depth-of-cut adjustments, on the move, with one button finger tip control. Allows you to cut longer rows through varying soil conditions. Save sod you would normally throw away. $895. 30-day satisfaction guarantee and full-year warranty. Write or call Shattuck Turf Equipment, 1872 N.W. 82nd, Des Moines, IA 50322, (515) 278-5255. Patented. 10/87

BROUWER SOD HARVESTER - 1981 - 18" Rolling unit with steel mat & cross conveyor on Ford 3600 diesel - 1887 hours - $20,500.00-Mint-Shore Tractor, New Jersey - 201-462-8822. 8/87

Olathe PTO CHIPPER 3PT OR TOW TYPE



MODEL 12. Proven daily for over 15 years on material up to 7" in diameter. With patented safety throwout device for operator control. One-half the price of engine-powered units.

Check our complete line of chippers by calling your local Olathe/Toro commercial dealer for a free demo. Or call Olathe Mfg. — 1-800-255-6438.

OLATHE MANUFACTURING, INC.
100 INDUSTRIAL PKWY, INDUSTRIAL AIRPORT, KS 66031
1-800-255-6438 • 913-782-4396

Circle No. 134 on Reader Inquiry Card

National
76" Heavy Duty Triplex Reel Mower

- **High Quality of Cut** with National's 6 bladed reels
- **Dependability/Durability** with National's rugged design
- **Affordability** with National's price

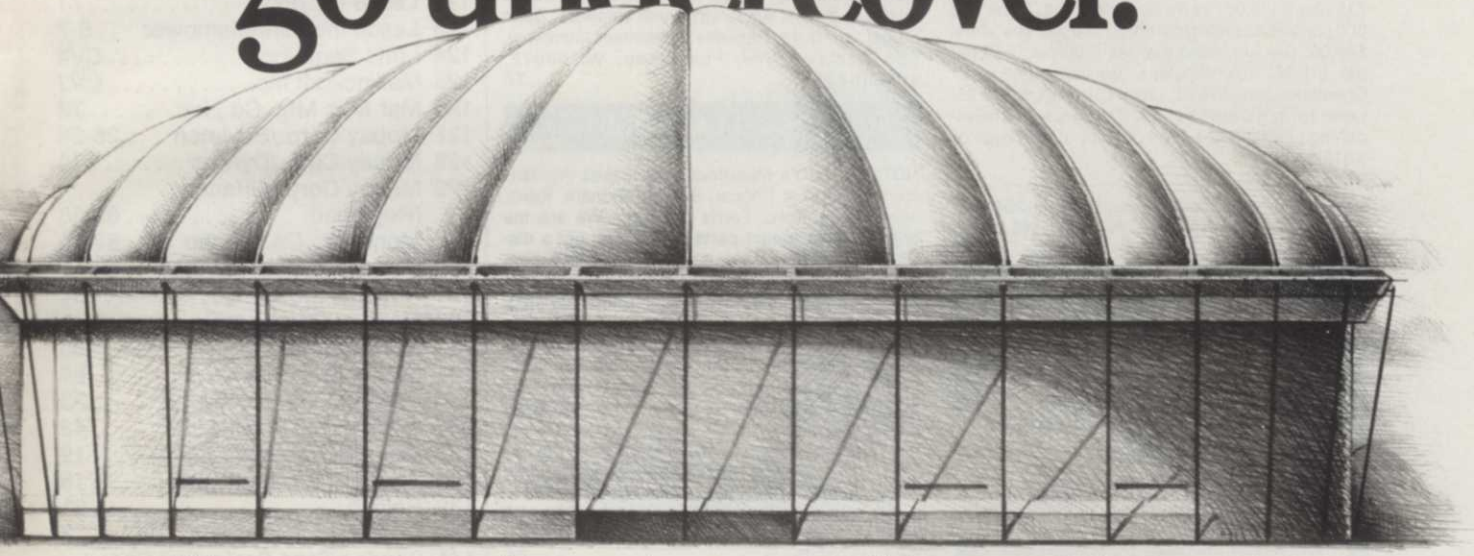
WRITE OR CALL TODAY!

Features
- 11 hp I/C Engine
- 6 mph transport speed
- heavy duty rollers
- long life bed knives

NATIONAL MOWER COMPANY
SINCE 1919
700 Raymond Avenue
St. Paul, Minnesota 55114
(612) 646-4079

Circle No. 131 on Reader Inquiry Card

To find a grass tougher than our new Aspen Kentucky bluegrass, you'd have to go undercover.



When searching for the ultimate turf, the grass to keep an eye on is Aspen, the elite new Kentucky bluegrass from Northrup King.

With qualities such as superior disease resistance, excellent color and texture, winterhardiness, heat tolerance, and wide adaptability, we think Aspen is not only the toughest, but the best bluegrass variety around.

Anything better would be downright unnatural.

You'll find Aspen only in Northrup King's Medalist Turf Mixtures. To uncover more information, contact Northrup King, P.O. Box 959, Minneapolis, Minnesota 55440.

Aspen / NK NORTHRUP KING

Circle No. 133 on Reader Inquiry Card

SPYDERS—used and rebuilt. Also a complete line of replacement parts for your Spyder. Call or Write: Mobile Lift Parts, Inc., 5402 Edgewood Rd., Crystal Lake, IL 60012. 815-455-7363. 9/87

BOWIE HYDRO-MULCHERS AND STRAW BLOWERS, New and used. Landscape Supply, Ltd., P.O. Box 22092, Greensboro, NC 27420. (919) 292-2922. 9/87

Arlo Crane, 100 ft., on a 1977 Intl. 1750, with a 3208 Cat. diesel. $28,500. (201) 447-4546. 8/87

Finn Hydroseeders, Mulch Spreaders, Krimpers, Pit Burners, Fiber Mulch & Tackifiers. New & Used. Wolbert & Master, Inc., P.O. Box 292, White Marsh, MD 21162, 301-335-9300. 12/87

FOR SALE: Vertical turbine pump station for golf course irrigation. Contact City of Plano, Texas, Parks Department, (214) 578-7263 for more information. 8/87

Ungalvanized Wire Baskets and Burlap Liners for tree spades and hand dug made by Colorado Wire Products, 9432 Motsenbocker Road, Parker, CO 80134. 303/841-3354. TF

HYDRO-MULCHERS AND STRAW BLOWERS New and used. **JAMES LINCOLN CORPORATION,** 3220 S. Jupiter Rd., Garland, TX 75041. (214) 840-2440 (TX), (800) 527-2304 (except TX). TF

LAWN SEED. Wholesale. Full line of top quality grasses. Improved bluegrass varieties, fine fescues and fine bladed ryegrasses. We specialize in custom mixing. Oliger Seed Company, 89 Hanna Parkway, Akron, OH 44319. Call collect (216) 724-1266. TF

HANNAY REELS: New in the box, E1526s and E1530s, $339.00. Lawn spray hose 275 psi and 600 psi, all sizes. Original Imler measuring wheels, $48.00. Glycerin filled gauges 0-60 psi, 2-02100 psi, $19.95. Polypropylene ball valves ½" to 2" Chemlawn guns $75.95. Lawn spray boots $16.95. Lawn spray gloves $1.25/pr. Call **Hercsh's Chemical Inc.,** 1-800-843-LAWN outside of Michigan or 1-313-543-2200. TF

SPYDERS - Used and reconditioned 2500 S. Cooper, Arlington, TX 76015. 817-261-7346 Mark. 10/87

SERVICES

ATTENTION LANDSCAPE MAINTENANCE CONTRACTORS

We sell full-color brochures with your company name and logo imprinted to help you sell your services to your customers. Orders taken for as few as 100 brochures. *"Give a professional touch to your sales calls!"* For samples write: **Green Tree Brochures, 742 South 4th Street, St. Louis, MO 63102. Ph. 314-241-5609.**

EXCESS LANDSCAPE TREE? We will buy or help you sell your excess landscape materials. We are located in Wichita, KS, Central U.S.A. (316)722-7230. Ask for Dave or Jim D., 2501 N. Maize Rd., Wichita, KS 67205. TF

RELINERS, TIRE REPAIR
Free Tire Supply Catalog

Hard-to-find ag tires, tubes, reliners, tire repair tools, hot-cold patches, boots, tire changers, low tire prices and more listed in **GEMPLER's free** catalog. *24 hr. UPS shipping.* Write: **Gempler's,** P.O. Box 270-70, Mt. Horeb, WI 53572 or call 1-800-382-8473.

AUCTIONS

OCTOBER AUCTION - Illinois Landscape Contractors Association and Hamilton Auction Company: **SELLERS** - Computer entry of your equipment. **BUYERS** contact 319-243-1252. Listed **Toro Triplex HAMILTON AUCTION COMPANY PROFESSIONAL LANDSCAPE AUCTIONEERS.** 228 Main Avenue, Clinton, IA 52732, 319-243-1252. 9/87

WANTED

WANTED: Large Lindig and Royer Shredders. Lewis Equipment. 320 Third Street S.W., Winter Haven, FL 33880. (813) 294-5893. 12/87

USED EQUIPMENT

BUCKET TRUCKS, Straight Stick, Corner Mount and Knuckle Boom Cranes. Brush Chippers - New Morbark Disc Type, New Woodchuck Drum Type. Best prices anywhere. Used Chippers - Asplundh, Woodchuck, etc. 2 to 8 usually in stock. Sprayers, Dumps, stakes, Log Loaders, Crew Cab Chip Box Dumps, Railroad Trucks, 50 in stock. Sold as is or reconditioned. Opdyke's Hatfield (Philadelphia Area) 215-721-4444. TF

NEW AND USED EQUIPMENT—Asplundh, Hi Ranger and Lift-all forestry bucket trucks, Chipmore wood chippers. Mirk, Inc., (216) 669-3567, (216) 669-3562, 7629 Chippewa Road, Orrville, Ohio 44667. TF

BUCKET TRUCK: Hi Ranger 65', 57', 50'. Skyworkers with chip boxes. Asplundh bucket trucks with chip boxes. Asplundh brush chippers. Bean 55 gal. sprayers. Parkway Equipment Company, 633 Cecilia Drive, Pewaukee, WI 53072. 414-691-4306. TF

MISCELLANEOUS

NOTICE: Bahr's Manufacturing makes replacement parts to fit Bobcat, Bunton, Exmark, Kees, John-Deere, Toro, Ferris & Scagg. We are the original replacement parts specialists, not a distributor or mail-order house that buys from a manufacturer and sells at a large mark-up. **Bahr's** will now sell direct — factory to you!! Same day shipping. At the present time, 98% stock made, ready to ship. **SAVE BIG BUCKS** by cutting out the middleman. Most of our parts are identified by a BA Prefix to the number. If you are now buying parts that have a BA Prefix - you are more than likely buying our parts. The BA designation was taken from the first two letters of our name. Save the 25 - 30% — **BUY SMART - BUY BAHR'S!** Call for a free catalog today. 1-800-526-2757 or 201-938-5683 or write direct to **BAHR'S REPLACEMENT PARTS SPECIALISTS,** 377A Yellowbrook Road, Freehold, NJ 07728. TF

LANDSCAPERS SUPPLY FREE CATALOG. Buy direct and save up to 75% on a full line of commercial lawn maintenance equipment, engines, parts and accessories. Call Toll Free 1-800-222-4304. 10/87

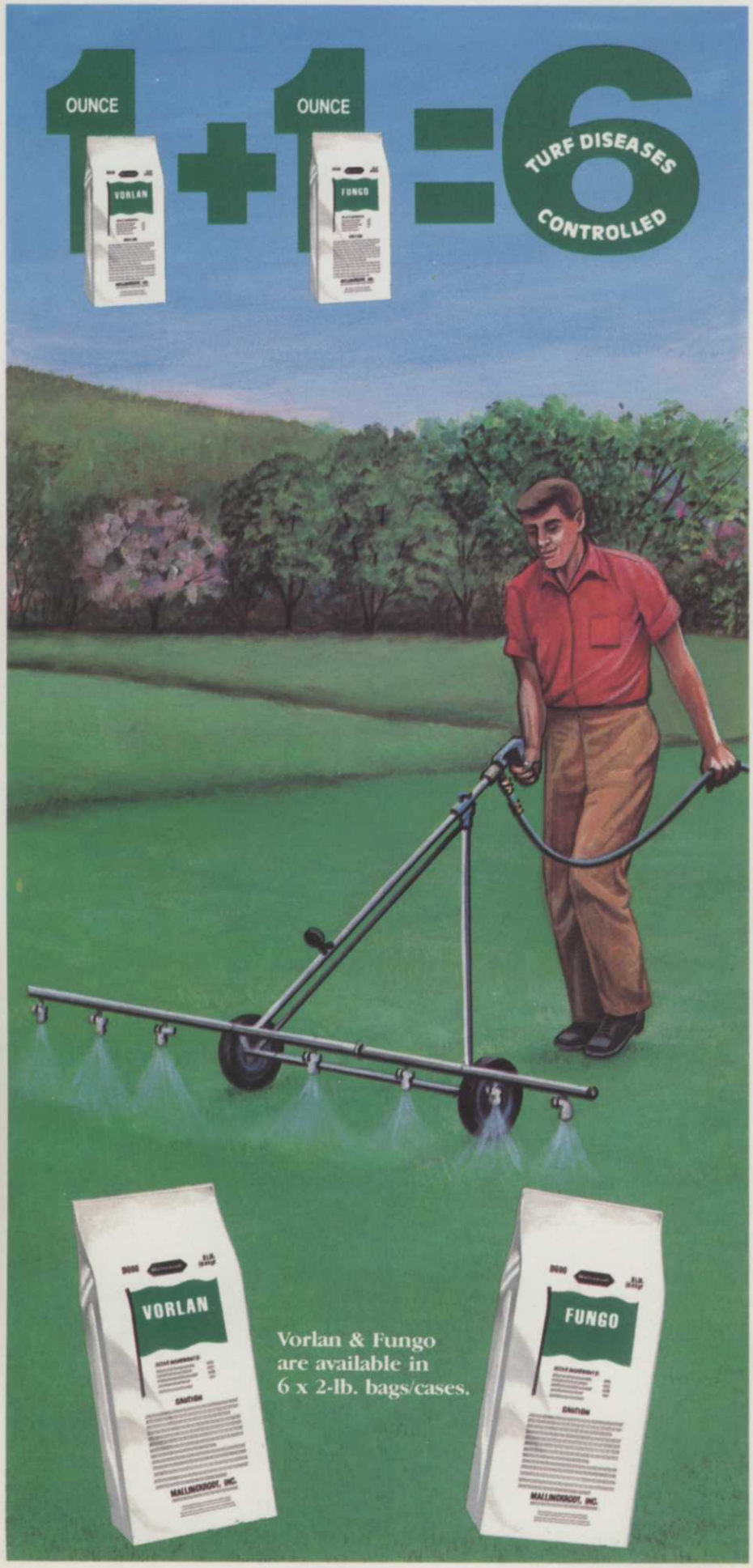
SITUATIONS WANTED

Seeking rounds supervisor or managers position for College, University, Hospital complex, Industrial site, or Recreational complex. Horticulture degree, advanced work in Hort. & L.A. Teaching and writing experience. Own business last 27 yrs.; Ind. & Commercial, Institutional speciality. 48 yrs. old, will relocate. Thomas C. Nelson, Box 907, Beecher, IL 60401. 312-946-2133. 8/87

AD INDEX

NO.	ADVERTISER	PAGE NO.
101	Atlantic Construction Fabrics, Inc.	75
102	Brouwer Turf Equipment LTD	67
103	Burlington Bio Medical and Scientific Corp.	64
104	Cellin Mfg. Inc.	76
105	CelPril Industries, Inc.	49
221	Chevron Chemical Co.	81
106	Ciba-Geigy Corp./Banner	20-21
107	Ciba-Geigy Corp/Subdue	5
108	Cushman/Turf	44-45
109	Cushman/Frontline	39
110	Cushman/Greenshire	25
111	Deere & Co., John	12-13
112	Elanco Products Co./Rubigan	15
113	Elanco Products Co./Rubigan	15
	Elanco Products Co./Excel (Regional)	42A-42D
115	Ford New Holland, Inc.	2
116	Gustafson, Inc.	10
117	Jacklin Seed Co./Arid	11
118	Jacklin Seed Co./Fylking	82
119	Jacobsen Div. of Textron, Inc.	83
120	Kohler Engine Div., Kohler Co.	57
121	Lebanon Chemical Corp.	51
122	Lesco Inc./Elite	71
123	Lesco Inc./Greensmower	6-7
124	Lofts Seed Inc.	CV4
125	Mallinckodt Inc.	CV3
126	Mar Mac Mfg. Co., Inc.	72
127	Mobay Corp./Bayleton	28-29
128	Mobay Corp./Dyrene	79
129	Mobay Corp./Oftanol (Regional)	62-63
	Monsanto Co./Rodeo	59-60
130	Monsanto Co./Roundup	40-41
131	National Mower Co.	84
132	Nor-Am Chemical Co.	1
133	Northrup King Co.	85
134	Olathe Mfg. Inc.	84
135	Oregon Fine Fescue	33
136	Oregon Tall Fescue	43
137	Pickseed West Inc.	19
138	Promark Products, Inc.	16
139	Reinco	61
140	Rhone Poulenc, Inc.	73
141	Sandoz Crop Protection Corp./ Mavrik	31
142	Scotts Proturf, O.M./TGR	34-35
143	Scotts Proturf, O.M.	52-53
144	Seed Research Co. (Regional)	58
145	Tee-2-Green Corp.	CV2
146	Teledyne Total Power	74
147	Turfco Mfg., Inc.	80
148	Turf Merchants Inc.	77
149	Turf Seed, Inc.	65
150	Turf Vac Corp.	50
151	Warren's Turf Professionals	27

This index is provided as an additional service. The publisher does not assume any liability for errors or omissions.



A New Turf Care Formula!

Two Well Proven Fungicides Together Add Up To Maximum Disease Control.

VORLAN™ is the product of choice by superintendents, professional lawn care operators and landscapers for the control of Leaf spot, Dollar spot, Red thread and Pink snow mold.

FUNGO® is the standard for control of the ever increasing problems of Brown Patch and Anthracnose.

This tank mix affords you the unequaled disease control, plus, the economy of a single spray at reduced rates.

A one ounce each application of VORLAN and FUNGO tank mix can prevent these six major diseases.

1. Leaf spot
2. Melting out
3. Dollar spot
4. Brown patch
5. Red thread
6. Anthracnose

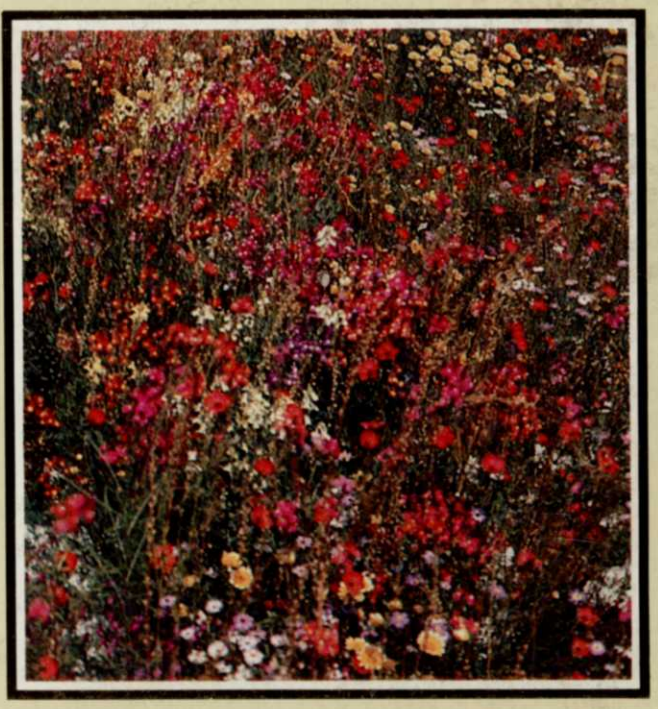
Without VORLAN and FUNGO your disease control program just won't add up. Contact your local Mallinckrodt distributor today.

Mallinckrodt®

P.O. Box 5439
St. Louis, MO 63147
(800) 325-7155

Circle No. 125 on Reader Inquiry Card

Create a Colorful Difference



WITH

Pinto BRAND WILD FLOWER MIX . . .

the colorful and decorative answer for low maintenance landscape areas.

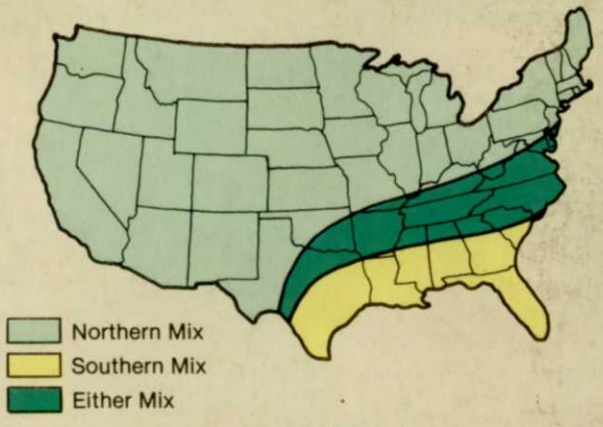
Multi-colored blends of annuals and perennials like Chicory, Scarlet Flax, Bachelor's Button, Baby's Breath and Painted Daisy. A blend that reseeds itself for lasting beauty year after year.

Pinto is ideal for any landscape — parks, roadsides, golf course roughs, home gardens, industrial and landfill sites. And perfect for areas where you don't have to mow.

Available either as 100% wild flowers, or mixed with a fescue as a Meadow Mix to aid soil stability.

It's custom blended in a Northern or Southern mix. So wherever you live, your Pinto order will be perfectly adapted for your climate. It will make this year the start of many colorful years to come.

Pinto Wild Flower Mix: the easy, low-maintenance way to naturalize your surroundings.



For more information or to place your Pinto order, call:

- **Marie Pompei or John Morrissey, Lofts (800) 526-3890**
- **Joe O'Donnell, Sunbelt Seeds, Inc. (404) 448-9932**
- **Don White (912) 382-4268**
- **John Sours or Grant Jurgensen of Jacklin Seed Company (800) 635-8726**

LOFTS

Lofts Inc.
Bound Brook, New Jersey 08805

Jacklin Seed Company
Post Falls, ID 83854

Circle No. 124 on Reader Inquiry Card